The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. IX. No. 218 AUGUST 18, 1923

Prepaid Annual Subscription
United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

	PAGE
EDITORIAL NOTES: The Problem of the Ruhr; Recent Developments in Urea Production; Dyestuffs Prices; Control of Oil Industry; Ireland and Safeguarding Act. .	165
Manufacture and Uses of Chloramine-T. By M. Briscoe, B.Sc.	168
Sir A. Duckham and Co-Directors	169
Decision on Formaldehyde Inquiry	169
Review of German Chemical Trade	170
Chemical Exhibits at Machinery Exhibition	172
Benn Brothers' Annual Meeting	173
Affairs of Sapon Soaps, Ltd.	174
Ireland and the Dyestuffs Act	174
Mineral Production of Canada	175
From Week to Week	176
References to Current Literature	177
Patent Literature	178
London, Scottish, and Manchester Markets	181–5
Company News and Trade Inquiries	186
Commercial Intelligence; New Companies	188

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.

Editorial and General Offices—8, *Bouverie St., London, E.C.4.*
Telegrams: "Allanger, Fleet, London." Telephone: City 9852 (6 lines).

The Problem of the Ruhr

THE European situation, as affected by France's occupation of the Ruhr and the diplomatic relations arising out of it, is being watched with anxiety by business men, and by none more keenly than by members of the chemical industry. There is generally, we believe, a real sympathy with France in the losses and suffering she endured through the war and in her desire to extort compensation from Germany and, indeed, to inflict just punishment for her crimes. But there must come an end to the antagonisms which the war aroused if international trade is to be resumed, and, sympathise as most people do with our Allies, the fact remains that the present situation is making the development of trade extremely difficult. If the kind of policy which is now being followed by France had been vigorously applied in the first six months following the Armistice, Germany would have promptly understood the meaning of defeat and would probably have made little trouble in complying with any possible conditions laid down. But after the lapse of some years, spent in rather vacillating discussions, it is not so easy to return to the policy of force, and action which, if taken at the time, might have produced the desired effect may not be equally applicable to the situation to-day. Here and there, it is true, the chemical industry of this country has gained from Germany's difficulties; but these advantages, we fear, are outweighed by the general arrest of business activity, and the losses are now generally regarded as exceeding the gains. In a word, traders want peace and the confidence which peace brings in order that business may move forward.

The situation has been rendered more acute by the German Government's decision to suspend for the time being reparation deliveries in kind to those countries which did not participate in the occupation of the Ruhr—namely, Great Britain, Italy, Greece, Jugo-Slavia, Portugal, and Roumania. The main commodities affected are coal to Italy and dyestuffs to this country. It is understood, however, that the deliveries of coal to Italy will be continued on account of its great need. It is not quite clear what effect the withholding of dyestuffs will have on trade in this country. Fortunately, we rely upon Germany for only a limited range now, and it is too early yet to say whether this decision is likely to have any very serious effects. In the absence of an industry of our own the consequences might have been disastrous.

Recent Developments in Urea Production

THE remarks made last week in connection with the new compound fertiliser which has been introduced by Mr. E. Lloyd Pease bring to mind the other attempts which have been made to eliminate the use of sulphuric acid in the fixation of the ammonia derived from coal carbonisation, or, for that matter, from synthetically produced ammonia. It is impossible, of course, to say whether existing producers of ammonia in this country, who are decidedly conservative in their methods, will ever get so far as to eliminate sulphuric acid from their processes; but there is no doubt that, as an alternative to the usual ammonium compounds, urea offers quite a number of attractions. During the war a good deal was heard about the production of this compound and its use as a fertiliser in Germany, and opinion in that country seems certainly to have been influenced by the fact that nitrogen combined in this way is at least as effective as when in the form of sulphate of ammonia or nitrate of soda. No apparent harmful effects in the soil or on the crops were observed, and the great merit of the substance lies in its concentration, and, therefor, the economy resulting from the point of view of transport.

The German methods of production are fairly generally known, in particular the recent patents of the Badische undertaking, and lately attention has been drawn in France to an elaboration of the ammonium carbamate method, in which the mechanical

difficulties formerly experienced are said to have been overcome. Several years ago the direct formation of urea was observed when ammonia and carbon dioxide were passed through a tube at red heat, and more recently catalysts have been employed to augment the yield. It has now been found that thoria measurably increases the yield, and that as much as 50 per cent. of the carbon dioxide can be converted, provided that ammonia is always in excess. Several practical considerations militate against the application of the method as it stands, but it points the way to a catalytic process, carried out at ordinary pressures, without the preliminary formation of troublesome ammonium carbamate. It is, in fact, said that an efficient catalyst giving complete, or almost complete, conversion of ammonia and carbon dioxide in a single passage and without ammonia being present in excess and therefore requiring recovery and re-use, is all that is required to make the process immediately applicable to technical practice.

The Dyestuff Prices Puzzle

MR. H. SUTCLIFFE SMITH'S views on the dyestuffs question are always worth considering, both from his official position as chairman of the Colour Users' Association and as a sincere supporter of a national dyestuffs industry. But some who welcome his views have failed to follow his argument in favour of a reduction of British prices in order to bring down German and other foreign prices, and the *Times Trade Supplement* has invited a further expression of opinion from him. He states, in his reply, that the price of foreign dyestuffs imported into the United Kingdom is on an enormously high level, and he argues that if the general level of prices of British productions which, after all, are the major quantity, were reduced, it would have a very material bearing upon the prices charged by foreign makers. Despite the enormous increase in the use of British colours as against foreign, it has to be borne in mind, he says, that the imports of foreign colour are yet not inconsiderable; in fact the total imports during the three years ended December 31 last were upwards of £10,000,000. If, therefore, the general level of prices in this country were reduced, it would mean a corresponding saving in sterling paid to those foreign makers, who are not slow to take advantage of the high prices ruling here because of the Prohibition Act.

It is no doubt true that the Board of Trade's price for a reparation colour rules the price for the same colour charged by the foreign maker's agents, for obviously consumers would not pay more to the importing agent than they would pay to the official distributor of a reparation colour. It is also true that if the prices of all British colours fell the German and other prices would certainly fall in proportion. The consumer, no doubt, would gain all round. But in the meantime, how is the British maker to maintain his industry if he has to sell at prices which may pay the cost of production in Germany but would not pay here? The German producer would suffer, but the British producer, and the industry, would suffer much more. It all comes back in the end to the question whether we shall pay the price of establishing an industry of our own. Nobody likes paying such a price if it can be avoided, but at the outset everyone declared his willingness to pay if only the return for it were satisfactory. On this point the evidence is now conclusive. The return to-day—in the form of a real dyestuffs industry—is far beyond what anyone would have ventured to predict at the outset of the undertaking. In spite of great technical and economic difficulties, persistent opposition, both open and veiled, and fierce competition from rivals, the British industry is making good, and though there may be stiff work still in front, we believe it will be carried through to success.

Control of the Oil Industry

THE Select Committee of the Lords appointed to consider the Petroleum Bill has brought out in its report a point of great interest to industry generally. The first object of the Bill is to transfer the licensing power in the case of large installations from the local authority to the central government, and to extend the control over petroleum spirit, which already exists, to other kinds of petroleum. This is the result of the recommendation of the Committee of Imperial Defence as to the importance of safeguarding in time of emergency supplies of oil fuel and petroleum products suitable for naval, military, or air purposes, and the necessity of insuring the safety of imperial defences which might be damaged or put out of action by the ignition of oil supplies.

The Committee properly point out that this proposal constitutes a proposition which is quite new to the commerce of this country. It is in effect that a trade may be regulated during peace in order that a commodity may be protected more easily or obtained more conveniently in time of war and that effect be given to this by statute. Further, if it should appear now that imperial interests require the special treatment of the petroleum industry in order to safeguard its supplies in time of emergency, the application of similar treatment to other industries may in time become a serious hindrance to the development of trade. Remembering the vital connection between the chemical and dyestuffs industry and national interests, the principle is one which ought not to be allowed to escape attention. Without any resort to statutory authority, the industries of the country—none more so than the chemical industry—responded generously to the call of the State during the late war, and it seems on every ground preferable to leave such matters to the patriotism of the country than to hamper commercial projects by State control.

Ireland and the Safeguarding Act

ON the recommendation of the Irish Fiscal Inquiry Committee the Dyestuffs Act has been repealed so far as the Irish Free State is concerned. The reason given is that there is no dyestuffs industry to be protected in Ireland and that hardship would be inflicted upon the textile and other industries by the retention of the restrictions. The result, of course, will be that Irish users of colour will be able to import what products they desire. The same Committee

also recommend the repeal of Part I of the Safeguarding of Industries Act, with the qualification that the period of six months should expire before the repeal takes effect. The reason here is that the industries Part I was designed to protect, though of importance to Great Britain, are industrially insignificant in Ireland, and that the duties increase the cost to the consumer of many useful and some necessary commodities without producing any return to the public revenue corresponding to the inconvenience caused. With respect to Part II of the Act, containing provisions respecting "dumping," the Committee are not prepared to express any general or final opinion at present. While they see no objection to the retention of the powers given to the Board of Trade, they see no reason either for retaining the duties already imposed on imports from Germany, since no Irish interest would be injuriously affected by their repeal and no response was made to a request for evidence from persons likely to be affected by the repeal. These decisions presumably only apply within the boundaries of the Irish Free State; the other portions of Ireland, including some important industrial centres, will still be subject to both Acts.

Chemical Trade Returns

THE official trade returns issued by the Board of Trade for July are the least favourable for some months and indicate a considerable decrease in the all-round trade of the country, due no doubt to the unsettled state of the European markets. It is, however, a slight encouragement to note that the trade in chemical products has not undergone such a heavy proportionate decrease. Though the value of chemicals imported shows a rather heavy decrease on last month's figures and also on the figures for July, 1922, the figures for the export trade, which are more nearly a guide to the state of the internal industry of the country, have a continued tendency to increase, and are above the figures for the corresponding month last year to the extent of £295,000. The exports, however, are well below those of June, but it is usually the case that less business is done in July than in the previous month. A considerable part of the increase in the export trade is probably due to the same factors that are causing a decrease in trade as a whole; for instance, the large export of British synthetic dyestuffs may be largely due to the Ruhr occupation having reduced the German exports. One of the largest increases in individual products, however, is shown in sulphate of ammonia, which would hardly be affected by the present situation. Though less has been exported to the Dutch East Indies, other countries continue to absorb this product in increasing quantities, this being particularly the case with Spain and Japan, which took 4,915 and 8,272 tons respectively. Sulphuric acid, sodium compounds, and crude coal-tar products also show a fairly satisfactory position on the export side, but it must be admitted that in other respects the trade outlook is not good, and little improvement can be hoped for except in isolated instances, until the European "tangle" is straightened out somewhat and the general trade has a chance to revive.

Barometers of Trade

THE success which Sir Ernest Benn was again able to claim in reviewing the work of the year at the annual meeting of Benn Brothers, Ltd., is again due, as he said, to the soundest of all reasons—hard and competent work, coupled with dependence on the company's own exertions instead of on outside help. As publishers of a large group of trade and technical journals and of a steadily lengthening series of technical and scientific works, the company's position tends to reflect the general conditions of industry. The main lesson, perhaps, is that commercial concerns to-day must rely on their own initiative in getting business and not wait for Providence to put it in their way. The trade and technical journal, especially when part of a representative group, as in this case, makes a fairly good barometer of trade, and the fact that all the firm's journals are still growing in circulation and influence speaks well for the condition of the chief industries which they represent.

Points from Our News Pages

Mr. M. Briscoe, B.Sc., discusses the merits of "Chloramine-T," a disinfectant largely used in Germany under the trade name of "Mianin" (p. 168).

Motions were made in the Vacation Court on Wednesday by Sir William Jones to restrain Arthur Duckham and Co. and Woodall, Duckham and Jones from preventing him acting as a director of the companies (p. 169).

The Official Referee has decided to exclude formaldehyde from the list of dutiable articles under Part I. of the Safeguarding of Industries Act (p. 169).

Preliminary notes are published on the Machinery and Engineering Exhibition to be opened at Olympia on August 31 (p. 172).

Sir Ernest Benn, at the annual meeting of Benn Brothers, Ltd., referred to the importance to industry of trade journals and text books on art, science and technology (p. 173).

Although under the influence of the holiday season, trade has been a little more active this week, states our London Market Report (p. 181).

Our Scottish Market Report describes prices as stationary; if anything, somewhat lower (p. 184).

The Manchester Chemical Market is reported as very quiet, for the moment confined to a number of staple "heavies" (p. 185).

Books Received

PRACTICAL PHYSICAL CHEMISTRY. By Alexander Findlay. London: Longmans, Green and Co. Pp. 298. 7s. 6d.

THE PETROLEUM YEAR BOOK, 1923. By Sydney H. North. London: The Petroleum Press, Ltd. Pp. 466. 10s. 6d.

INDUSTRIAL OXYGEN. By T. Campbell Finlayson, B.Sc. London, The Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd. Pp. 82.

HANDBOOK OF CHEMISTRY AND PHYSICS. By Charles D. Hodgman and Norbert A. Lange. Cleveland, Ohio, U.S.A.; Chemical Rubber Publishing Co. Pp. 803. $4·00.

The Calendar

Aug. 31 to Sept. 22	Shipping, Engineering and Machinery Exhibition.	Olympia, London.
Sept. 10-13	Institute of Metals: Annual Meeting.	Manchester.
12-19	British Association for the Advancement of Science: Ninety-first Annual Meeting.	Liverpool.

The Manufacture and Uses of Chloramine—T.

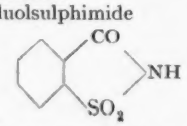
By M. Briscoe, B.Sc., A.I.C.

The writer discusses the merits of a disinfectant which is little known in this country, but which, under the trade name of "Mianin," is largely used in Germany and also in the United States.

DURING the war the chemical industry of this country worked at an intensity never previously attained, nor since reached again. Many substances were made on a large scale which are now not manufactured at all or at best only in small quantities. Many names of chemicals became almost household words which are now entirely unknown to the general public. In many cases this is quite natural. The materials of war are not necessarily the materials of peace. There can be no cogent reason for making dichlorethylsulphide (mustard gas) at the present time, unless an industrial or synthetic use for it were discovered. On the other hand, many materials were made in this country during the war which are eminently useful and which we could well do with to-day. Unfortunately a good many of these were in the nature of by-products whose economic production depended on a demand for the main substance for which the plant was erected. Since then many of these "main" substances are no longer used or needed, or are imported at cheaper rates.

One of these by-products is "Chloramine-T." This is still produced in this country to-day, but only in small quantities, and the reason is not far to seek. The economic production of Chloramine-T is bound up with the manufacture of Saccharine and the possible output of Chloramine-T depends upon the output of Saccharine. To make Chloramine-T for its own sake alone is certainly as much a chemical possibility as making Saccharine for its own sake, but it would be impossible to do it at a reasonable cost. Yet Chloramine-T is one of those substances whose output in abundance would be very useful for this country for reasons we shall discuss later. In the meantime let us examine how Chloramine-T and Saccharine are related.

Saccharine is o-toluolsulphimide

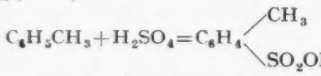


Chloramine-T is the sodium salt of p-toluolchlorsulphamide

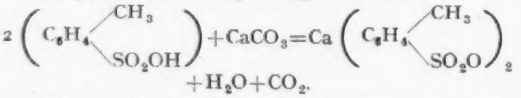
Let us follow up the process of manufacture and see where the two diverge.

The synthesis of Saccharine starts with toluene as the basis.

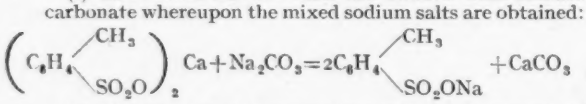
(*a*) Heated to a temperature not exceeding 100° C. with concentrated sulphuric acid toluene is converted into a mixture of ortho, meta, and para toluol-sulphonic acids :



(*b*) These mixed sulphonic acids are neutralised with chalk giving the corresponding calcium salts :

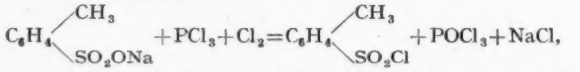


(*c*) The mixed calcium salts are treated with sodium carbonate whereupon the mixed sodium salts are obtained:



(*d*) The solution of these sodium salts is evaporated to dryness, the residue washed and dried.

(*e*) The dried sodium salts are intimately mixed and agitated with phosphorous trichloride whilst a current of chlorine gas is kept passing through. The sulphonic chlorides result :

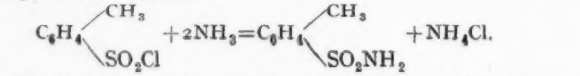


(*f*) The mixed sulphonic-chlorides are then separated by crystallisation. The meta and para are solid and separate out. The ortho is liquid and remains.

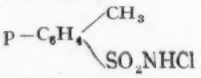
This marks the point of departure. The *ortho* toluene sulphonic chloride is then converted by a series of reactions into Saccharine, which is the desired product.

The meta- and para- (they are mostly para-) toluene sulphonic chlorides were at first merely waste products. Experiment with the para soon led to interesting discoveries.

By passing a current of ammonia gas over it p-toluenesulphamide is obtained :

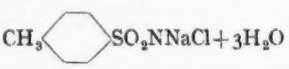


This body has a chloro-derivative known as p-toluolmonochlorsulphamide of formula :



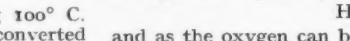
which was found to have strong disinfectant properties. Unfortunately it was insoluble in water and only soluble in organic solvents. This militated against its general use, though a solution of it in chlorinated paraffin oil was sold under the name "Chlorcosan."

It was found, however, that the H atom of the group SO_2NHCl could function as an acid hydrogen radical replaceable by sodium. The sodium salt of this, which is Chloramine-T, has the formula



and is a crystalline solid with three molecules of water of crystallisation. What is remarkable about this compound, however, is that it is very soluble in water and has extraordinarily powerful disinfectant properties.

It functions chemically to a certain extent as an organic hypochlorite. It will be seen from its formula that the percentage of chlorine in the molecule is 12·6. Since, however, the decomposition of a hypochlorite involves the evolution of an equivalent quantity of oxygen



and as the oxygen can be reckoned to play an equal part in imparting disinfectant properties to the medium, it is customary in the technology of the subject to express the total disinfecting power in terms of "effective chlorine," which in this case, therefore, is double the quantity of "actual chlorine," *i.e.*, 25·2 per cent.

The best method of estimating Chloramine-T is to dissolve 0·5 gm. of the preparation containing it in water, add 2 gms. pot. iodide, acidify with hydrochloric acid and titrate with $\frac{N}{10}$ thiosulphate solution (1 cc. of this is equivalent to 0·01408 gm. Chloramine-T).

Its disinfectant power is very great. At a dilution of 1:500,000 it is still effective. Its germicidal properties can be gauged from the following table :—

BACTERIA.	CONC. OF CHLORAMINE-T TO KILL IN 10 MINUTES.
Streptococci	1 in 34,000
Diphtheria Bacilli	1 ,, 30,000
Dysentery ,,	1 ,, 22,000
Typhus ,,	1 ,, 20,000
Colic ,,	1 ,, 18,000
Staphylcocci	1 ,, 16,000

Piorkowski states that Chloramine-T is twice as powerful a disinfectant as Chinosol, which was, up to then, the strongest examined. He found too that at a dilution of 1 in 20,000 the faint chlorine-like smell had completely disappeared, whereas at a dilution of 1 in 35,000 its germicidal action was still strong. He was able, by a solution of this strength, to sterilise water. In one hour the number of germs decreased from 2,067 to 84, in two hours to 7, and in six to twenty-four hours the water was completely sterile. Professor Loewe, after exhaustive experiments, concluded that Chloramine-T may be taken internally in considerable quantities without any effect on the general health, the mucous-membranes, or the appetite. He concludes, therefore, that it is quite safe even to use it for internal disinfection.

From the point of view of strength and efficiency it compares favourably with any other disinfectant. On the other hand, from many other points of view, it has manifold advantages.

The inorganic hypochlorites are strongly alkaline in solution and, as such, cannot be applied to wounds, cuts, sores, etc., without causing great irritation to the surrounding flesh and skin. Likewise these cannot be applied to the tender parts of the body. Chloramine-T, however, is neutral in solution and can be used even on the most delicate parts without any evil after-effects whatever. Again, if the alkalinity of the inorganic hypochlorites is reduced, the stability of the solution is gravely affected, and it tends to decompose and liberate oxygen slowly under normal conditions and rapidly in sunlight.

Compared with phenolic and cresolic disinfectants, Chloramine-T has practically no odour, is absolutely non-poisonous, can be taken internally without fear and from the point of view of the public is practically "fool-proof." That this is very important is obvious from the number of fatalities that occur with disinfectants of the phenolic and cresolic type. Compared with the corrosive sublimate type of disinfectant the same advantages hold obviously in an enhanced degree. In addition, Chloramine-T is absolutely without effect on metallic vessels and instruments, whereas mercury salts seriously affect these. Chloramine-T can, therefore, be used for the sterilisation of surgical instruments, etc.

Chloramine-T would appear to be a sort of universal disinfectant. It is absolutely non-toxic and can be used for treating wounds, sores, etc.; for sterilising water and instruments; as a mouth wash; as an antiseptic wash after shaving; as a gargle for the throat; in the bath and in hygienic irrigation; as a disinfectant wash for clothes and household utensils, etc., etc. Were it available in really large quantities in this country it would be a real boon to the public. Unfortunately, though made here, its output is small—certainly not of the same order as the output of phenolic and cresolic disinfectants. It is advertised by makers in the U.S.A. as "the modern disinfectant." In Germany it is available on a large scale. The Saccharin-Fabrik, Aktiengesellschaft, vorm. Fahlberg, List & Co., Magdeburg-Südost, the original producers of Saccharine and still probably the largest makers in the world, naturally are foremost in turning out this product. They market it in Germany in any quantity under the trade name "Mianin." It is obtained in two forms: in tablets—to which a trace of yellow dye has been added—which are extremely soluble and of which 1 to 5 are dissolved per litre of water according to the use to which the disinfectant is to be put; as a powder containing 5 per cent. Chloramine-T for the treatment of running sores and portions of the body specially subject to perspiration. Moreover, the product is marketed at a very cheap price and seems to enjoy a great popularity.

Possibly the production of Saccharine in the country may again receive sufficient impetus to make the supply of p-toluolsulphonic-chloride sufficiently great to produce Chloramine-T on a large scale.

United States Potash Production

RETURNS from potash producers in the United States to the Geological Survey indicate that the output in 1922 amounted to 25,176 short tons of crude potash salts containing 11,714 short tons of actual potash (K_2O). The sales amounted to 22,028 short tons of crude potash containing 11,313 tons of (K_2O) valued at $463,512. About 30,000 short tons of crude potash were held by the producers on December 31, 1922.

Sir Arthur Duckham and Co-Directors

Sir William Jones's Motion Against Exclusion

ON Wednesday, in the Vacation Court, Mr. Justice Russe had before him two motions by Sir William J. Jones to restrain Arthur Duckham and Co. (1920), Ltd., and Woodhall, Duckham and Jones (1920), Ltd., from preventing the plaintiff from voting as a director of the companies, and from excluding him from the meetings. Mr. Owen Thompson, K.C., appeared for the plaintiff, and Mr. Jenkins, K.C., for the defendants.

Mr. Thompson said the business of the companies was to work experimental processes and inventions on their own behalf and by subsidiary companies. Their work was mostly in regard to chemistry and the production of gas. The profits were very large. The plaintiff held 29,000 ordinary shares and 6,576 preference shares, but he did not hold the majority of the shares. Sir Arthur Duckham was chairman of the companies. The relations of the directors were friendly until June last, when the plaintiff received a letter from Sir Arthur Duckham which stated that "one of them" must cease active connection with the company. There had been friction between the plaintiff and the other directors, and in July resolutions were passed excluding the plaintiff from exercising any power as a director, except in regard to a company to do with magnesium. The plaintiff contended that he had done all he could to further the interests of the companies.

Mr. Jenkins (for Sir Arthur Duckham) read a long affidavit from his client. In the course of it Sir Arthur said that he was not impressed with the plaintiff's conduct and attitude in the matters of the companies, and, in consequence, he thought the interests of the companies were at stake; and also, owing to the continued differences between the plaintiff and himself. The plaintiff's attitude was detrimental to the companies, and the resolutions were passed solely in the interest of the companies.

Affidavits made by the other directors, Messrs. Woodhouse, Smith, Jackson, and Richards, were read.

The plaintiff replied, giving a general denial to Sir Arthur Duckham's statements.

After discussion, his Lordship made no order, the defendants saying it was not their intention to exclude the plaintiff from the Board, but to give him notice of all Board meetings, so that he could attend and express his views and vote. The costs would be costs in the action.

Official Referee's Award on Formaldehyde

Excluded from List of Dutiable Articles

THE Board of Trade announce that the Referee has given his decision in the matter of a complaint under Section 1, Sub-section (5) of the Safeguarding of Industries Act, Part I., that formaldehyde has been improperly included in the lists of articles chargeable with duty under Part I. of the Act. The Referee has awarded that formaldehyde be excluded from the list, and the withdrawal will take place as from August 20.

Oil Merchant's Failure

AT a meeting of the creditors of Robert Morrison Lambert, drug, chemical and essential oils merchant, of 10, Great St. Helens, London, E.C, held in the London Bankruptcy Court on August 10, it was stated that the debtor's liabilities, amounting to between £6,000 and £8,000, arose chiefly from losses on contracts, lack of capital, falling markets, and heavy advertising expenses. The assets comprised book debts amounting to £2,100, but of doubtful value. Apart from a few tradesmen's accounts, the debtor had not contracted any liabilities since 1921. The case was left in the hands of the Official Receiver.

Fewer Unemployed

THERE WERE 1,191,800 persons wholly unemployed in Great Britain on August 6, announces the Ministry of Labour. This figure was 3,694 less than that in the preceding week and 294,078 less than the total recorded on January 1 last. The number working short time and drawing benefit for intervals of unemployment was 64,900 on August 6, as compared with 66,885 on July 30, and 56,261 on January 1, 1923.

General Review of German Chemical Trade Conditions

Control over Export Trade

THE activity of the German chemical industry has been greatly enhanced during the last few weeks (writes the German correspondent of the *European Commercial*), the precipitous depreciation of the mark driving customers both at home and abroad to buy rapidly and copiously in the hope of escaping material losses by a larger accumulation of goods. In the case of foreign countries the lower German prices are naturally also an incentive to purchasers, for the price of German goods, f.o.b. Hamburg and including wrapping, is considerably below any foreign quotation. Even from the standpoint of the inland purchaser, prices have not altogether followed the mark depreciation. The same may be said of the cost of fertilisers—phosphorus, potash, and nitrogen. After having temporarily exceeded world-market parity in marks, the German chemical prices have been steadily on the decline, if calculated in gold. Assuming 100 to represent the 1913 level, they may be said to have sunk from 157 in March to 136 in April and down to 84 in May and at present to average about 90. The latest quotations per ton to hand at the moment of writing are as follow :

	£	s.	d.
Caustic soda 125/28	17	5	0
Caustic potash 88/92	27	5	0
Bromide of potash	38	0	0
Chloride of calcium 70/75	3	6	0
Alum	6	0	0
Copper vitriol 98/100	22	0	0
Potash 96/98	26	15	0
Caustic potash 98/100	36	0	0
Soda crystals	4	10	0
Sal-ammoniac 98/100	20	0	0

Great Influx of Orders

The great influx of orders made it possible to engage great numbers of new workers ; in Southern Germany the factories even failed completely to satisfy the market demands, which exceeded their maximum capacity. Apart from the desire to get rid of paper marks, the chief motive of inland orders is the constant rise of freights and wages and of the goods themselves. The greatest rush of orders appears to be over, for in the first weeks of July a certain relaxation was noticeable in the case of foreign indents. Each successive drop in the mark rate, however, exercises a renewed stimulus on trade. Photographic chemicals in particular are greatly in demand in view of the summer season. On the other hand, the market for explosives is declining, the coal mines in the occupied regions placing far fewer orders than formerly. The chemical works in the occupied territory can naturally only produce for export to a very limited extent.

For the enlightenment of interested circles, it may here be pointed out that prices of chemicals are at no time completely uniform in Germany ; slight divergences always occur, as is natural in view of the numerous different methods of production and secrets of manufacture. There are no outspoken chemical exchanges, all attempts at founding such having failed. The " Anilinkonzern " and the various trusts and syndicates, which are particularly powerful in the case of the chemical industry, work for the standardising of prices. It has frequently occurred that these combines have refused to supply new customers, despite which fact the number of dealers has very greatly increased, figuring at present at about 170, compared with only 30 before the war. As far as possible the chemical industry prefers to keep export trade in its own hands and has, therefore, frequently objected to supplying dealers with any documentary evidence as to selling prices, etc. According to the German export regulations, every exporter must submit such evidence for the purpose of having the export price controlled.

The Potash Market

The potash market is more extensive than ever before ; almost all the stocks are depleted and many factories are behindhand in the execution of orders. It is the first time in the history of the Potash Syndicate that there has been so great a sale in the summer season. The syndicate has already called upon all the concerns connected with it to increase production to the utmost, with a view to prompt delivery in the autumn. It must be remembered that phosphates and nitrogen are mainly produced in the occupied territory and can, therefore, not pass unhindered into the rest of Germany. This situation has led to sulphate of ammonia, saltpetre, and ammonium nitrate being produced in greater quantities than hitherto. The question of fertilisers is of decided importance, not so much for German agriculture itself as for the German currency. The worse the crop, the greater the need of foreign corn and foreign means of payment to procure it and the greater the demand on 'Change for such means of payment. According to results to hand, German agriculture in 1922 made a far greater use of artificial fertilisers than in the preceding twelve months.

Exploiting Russian Chemicals

In the case of nitrogenous fertilisers Chile saltpetre and Norwegian saltpetre now play a negligible rôle. Among the phosphorus fertilisers, basic slag takes the first place, though the proportion will have been influenced since the close of 1922 by the Ruhr occupation. Within the last few days new possibilities have arisen in the direction of the acquisition of phosphate by co-operation on the part of Russia and Germany. Russian reports state that very great deposits of phosphates exist in the Vyadka government on the river Kama immediately below the surface of the earth. Russia has not sufficient means for the chemical exploitation of these deposits, but hopes are entertained that the German chemical works may be prepared to exploit them. In the near future steps will probably be taken towards the solution of this problem. Upon the whole, a very benevolent attitude obtains in Russia toward the German chemical industry, reports from the Ukraine stating that the participation of German firms in the manufacture of lacquer would be welcome, the distillation of coal tar in the Donez basin providing sufficient material for manufacture on a large scale.

The export of potash to England is increasing prodigiously ; England is at present the best customer for crude potash salts and bromide of potash, also buying great quantities of fertiliser salts, chloride of limestone and sulphate of alumina. The following are the numbers of tons exported there in the five months January-May, 1923, compared with the same period in 1922 :

	1923	1922
Nitrate of potash	57,297	35,789
Bromide of potash	208	8·9
Potash	664	422
Ammonium nitrate	3,285	675
Calcium chloride and magnesium chloride	6,931	1,982

Magnesium Developments

A serious problem for Germany is the exploitation of magnesium chloride, which results in tremendous quantities in the form of lye as a by-product of potash and must be allowed to go to waste. The consumption of magnesium chloride is at present no more than 3 per cent. of the output. Only 85,000 metric centals of carnallite were used in 1922 for the production of magnesium, and about 45,000 metric centals in the first three months of 1923. In all, however, more than four million centals of carnallite were produced in 1922, containing an enormous quantity of magnesium, which was allowed to flow into the rivers in the form of lye. The endeavours of German chemists are directed towards constructing a continually burning magnesium lamp. It is a well-known fact that such lamps are used in the pits and for photographic purposes, but their light is unsteady. If it were possible to produce a steady magnesium flame there would be a possibility of a cheap exploitation of vast quantities of magnesium, resulting in serious competition for electric light.

Exports of Dyes

The export of colours and dyes moves on the level of last year's returns, although there is a greater demand for certain varieties. In the January-May period 56,638 tons were

exported as against 54,900 in the corresponding section of last year. Although China is at present the greatest importer of aniline dyes (3,599 tons against 2,860 tons in 1922), the May returns showed a serious decline on those of the previous months, though this is perhaps only temporary. The United States purchased 187 tons of aniline dyes in the first five months of this year as against 68·9 tons in 1922. Exports to England rose greatly in several varieties, *e.g.*, white lead, lithopone and chalk and copper colours. Holland, Sweden and the South American countries also increased their imports from Germany. In detail, the exports in tons figured as follow for the January to May period :

	1923	1922
Aniline dyes	14,126	12,505
Alizarine dyes	217	381
Indigo, artificial and natural	3,345	6,025
White lead	1,705	1,698
Zinc oxide	3,413	3,366
Zinc sulphide (lithopone)	4,046	3,762
Copper colours	1,615	1,395
Chalk colours	20,746	16,935

Exports to Egypt decreased considerably, though it was only last year that Germany had practically a monopoly for the supply of synthetic indigo to that country. This change is attributed to the conduct of the German firms, which failed to keep to stipulated prices and dates of delivery. Hungary, which used to be a good market for German chemicals, has almost been eliminated, since the Hungarian foreign exchange centre provides importers with vastly inadequate supplies of foreign bills.

Degrees for Chemical Research

THE degree of Ph.D. in Science has been conferred on the following students at London University for research work in chemistry :—W. A. P. Challenor (Imperial College, Royal College of Science) : " Conditions underlying Carbon Ring Formation " ; B. W. Clack (Birkbeck College) : " A Research on Diffusion in Liquids " ; P. W. Cunliffe (King's College) : " (*a*) Studies in Photo-Chemical Light Sources ; (*b*) Studies on the Photolysis of Aqueous Solutions of Hypochlorous Acid and of Chlorine " ; F. Dickens (Imperial College, Royal College of Science) : " The Conditions of Formation of Four- and Five-membered Rings from Substituted and Unsubstituted Open Carbon Chains " ; Miss C. H. Griffiths (Birkbeck College) : " Co-efficients of Diffusion of Potassium Chloride, Sodium Chloride, and Potassium Nitrate determined from the published experimental data of Mr. B. W. Clack by a method due to Dr. Albert Griffiths " ; Miss I. E. Knaggs (Imperial College, Royal College of Science) : " The Relation between the Crystal Structure and Constitution of Carbon Compounds, with special reference to simple Substitution Products of Methane " ; K. C. Pandya (Imperial College, Royal College of Science) : " The Influence of Groups on Carbon Valency Direction " ; H. A. Piggott (Imperial College, Royal College of Science) : " A Study of the Conditions which determine the Mobility (or otherwise) of certain Potential Tautomeric Systems of the Glutaconic Acid Type in the Aromatic Series " ; L. Rebekoff (King's College) : " (*a*) Studies in the Photolyses of Formic and Oxalic Acids ; (*b*) Studies in some Photo-chemical Light Sources " ; D. O. Shiels (King's College) : " The Absorption of Water Vapour and other Vapours by Charcoal " ; B. Singh (Imperial College, Royal College of Science) : " Formation and Stability of Cyclic Compounds derived from β Substituted Glutaric Acid " ; I. W. Wark (University College) : " Some Copper Complexes with Hydroxy-Acids " ; A. F. A. Young (King's College) : " The Thermionic and Photo-Electric Properties of the Electro-positive Metals " F. Arnall (Chelsea Polytechnic) : " Studies in the Nitration of Phenol " ; G. R. Clemo (Queen's College, Oxford) : " The Introduction of the β-chloro-ethyl Group into Phenols, Thiophenols, Aromatic Amines, etc. " ; J. W. Cook (Sir John Cass Technical Institute) : " Some Derivatives of Anthracene " ; B. S. Evans : " An Investigation into the Chemistry of the Reinsch Test for Arsenic and Antimony, and its Extension to Bismuth " ; S. I. Levy : (1) " Studies on Cyclic Ketones, Parts II and III " ; (2) " An Attempt to resolve an Oxonium Salt " ; (3) " The Action of Amino-Acid Esters on Ethyl Dicarboxyglutaconate " ; (4) " 4'-Methoxy-1'-naphthyl)-2-chromon."

Chemical Trade Returns for July

THE Board of Trade returns for July show reductions in the value of imports and exports for the general trade of Great Britain, both as compared with June, 1923, and with July of last year. Last month's imports were valued at £76,818,334, a decrease of £4,918,493, or 6·01 per cent. compared with July, 1922, and a decrease of nearly £12,500,000 compared with June last, when the total was £89,307,683. Exports of British produce and manufactures last month were valued at £59,503,850, a decrease of £914,776, or 1·51 per cent. compared with July last year, and a decrease of over £3,000,000 compared with June.

The figures for the chemical trade, however, show an increase in exports for July, 1923, compared with the corresponding month of 1922, otherwise an all-round decrease is shown. The imports of chemicals, dyes, drugs and colours for July, 1923, were valued at £796,366, a decrease of £136,868 on the June figures, or £35,610 on the July, 1922, figures. Exports in July were £1,739,561, which is £294,918 above July, 1922, but £645,511 below the figures for June, 1923.

Imports for July

INCREASES.		1923.	1922.
Acid, acetic	tons	752	371
Borax	cwts.	7,450	3,299
Calcium carbide	,,	37,159	20,648
Distilled glycerin	,,	352	239
Red lead and orange lead	,,	5,046	1,944
Nickel oxide	,,	1,860	—
Potassium nitrate	,,	15,541	11,642
Other potassium compounds	,,	147,465	124,602
Sodium compounds, except nitrate	,,	11,647	10,825
Cream of tartar	,,	4,588	4,124
Zinc oxide	tons	484	465
Intermediate coal tar products, including aniline oil, and salt, and phenyl glycine	cwts.	10	—
Alizarine dyes	,,	734	152
Unspecified coal tar dyes	,,	4,272	2,567
Mercury	lbs.	114,092	93,740
DECREASES.			
Acid, tartaric (including tartrates)	cwts.	2,680	5,788
Bleaching materials	,,	1,608	2,117
Crude glycerin	,,	1,857	4,739
Sodium nitrate	,,	40,889	42,464
Natural indigo	,,	30	196
Barytes (including blanc fixe)	,,	39,808	40,218
White lead	,,	8,453	12,405
Unspecified painters' colours	,,	54,611	63,058
Essential oils, except turpentine	,,	192,481	193,599
Turpentine	,,	32,139	40,083

Exports for July

INCREASES.		1923.	1922.
Acid, sulphuric	cwts.	1,961	1,278
Acid, tartaric (including tartrates)	,,	648	278
Ammonium sulphate	tons	20,586	7,387
Benzol and toluol	cwts.	67,763	8,557
Carbolic acid	,,	9,648	6,130
Naphtha	galls.	9,281	2,709
Naphthalene	cwts.	19,856	1,516
Unspecified coal tar products	,,	30,291	24,889
Glycerin, crude	,,	6,789	2,325
Glycerin, distilled	,,	3,986	3,180
Sodium carbonate, etc.	,,	414,608	328,377
Sodium sulphate (including saltcake)	,,	212,546	119,610
Coal tar dyes	,,	15,023	3,668
Other synthetic dyes	,,	4,300	4,095
Barytes (including blanc fixe)	,,	14,167	12,334
Paints, etc., ground in oil or water	,,	25,545	22,054
Paints and enamels prepared	,,	22,495	18,214
Painters' colours, etc., unspecified	,,	49,671	46,565
DECREASES.			
Ammonium chloride	cwts.	176	437
Bleaching powder	,,	6,750	26,811
Tar oil, creosote, etc.	galls.	2,029,275	2,607,337
Copper sulphate	tons	1,290	1,316
Potassium chromate and bichromate	cwts.	1,530	2,042
Potassium nitrate	,,	714	1,200
Other potassium compounds	,,	1,414	1,866
Caustic soda	,,	111,391	126,107
Sodium chromate and bichromate	,,	1,775	3,630
Unspecified sodium compounds	,,	29,168	36,027
Zinc oxide	tons	243	318
White lead	cwts.	15,811	19,997

Machinery and Engineering Exhibition

Chemical Trades Exhibits

OLYMPIA has been selected as the site of the Shipping, Engineering and Machinery Exhibition, to be held from August 31 to September 22. According to the preliminary official bulletin just issued special interest is being manifested in the enterprise by a number of gentlemen who have long been conspicuous in the realms of science, while the organisers and consulting engineers are men of wide experience whose activities should guarantee success.

A feature of the exhibition season will be official visits ranging from September 4 to September 21. The representative societies scheduled include thirty-six associations embracing mechanical and marine engineering, gas, surveying, sanitation, heating, ventilating, acetylene and welding, mining and metallurgy, architecture, ship and boat building, automobiles, aeronautics and electricity.

Among prospective exhibitors are the Alloy Welding Processes, Ltd., the Auto-Welding and Engineering Company, Ltd., the Avamore Pump Company, Ltd., Babcock and Wilcox, Ltd., J. Blakeborough and Sons, Boulton and Paul, Ltd., the British Arc Welding Company, Ltd., the British Engine, Boiler and Electrical Insurance Company, Ltd., the British Oxygen Company, Ltd., British Separators, Ltd., Carbic, Ltd., the Chemical Engineering Company (Manchester), Ltd., Graphite Products, Ltd., Hydrogen, Oxygen and Plant Company, Ltd., Jeyes Sanitary Compounds Company, Ltd., Metallisation Ltd., Necol Industrial Collodions, Ltd., Nobel Industries, Ltd., Ozonair, Ltd., E. Arnold Pochin and Sons, Pyrene Company, Ltd., Ransomes, Sims and Jefferies, Ltd., the Relay Automatic Telephone Company, Ltd., Siemens Brothers and Company, Ltd., Sparklets Ltd., John Thompson, Water-Tube Boilers, Ltd., Thorn and Hoddle Acetylene Company, Ltd., United Water Softeners, Ltd., and Wailes Dove Bitumastic, Ltd.

Brief descriptions of some of the probable contents of the various stands have been issued by the Exhibition authorities. For example, Graphite Products, Ltd., will have a full range of their manufactures, including their " Foliac " flake graphite and lubricators for introducing graphite into cylinders of steam and internal combustion engines.

The Chemical Engineering Company (Manchester), Ltd., will exhibit the " Kek " centrifugal grinding and blending mill, which deals with chemicals, dyes, paints, minerals and other substances.

Alloy Welding Processes, Ltd. will show a portable "A.W.P." engine-driven arc welding plant for one operator, and demonstrations will be given daily.

Carbic Ltd. will demonstrate cutting and welding by " Carbic " portable generators, and will show how acetylene is produced from carbide cakes.

The Premier Electric Welding Company will exhibit a range of electric welding equipment and accessories, alternating current arc welding plant, single operator direct welding machines, and the new " Premier " high carbon electrode.

The principal feature of Ozonair Ltd.'s stand will be the application of pure ozone for ventilation and heating, deodorisation, water purification, food preservation, brewing, bleaching, and flour-mill air conditioning.

Patent water elevators will be the outstanding feature of Boulton and Paul's exhibit, but the firm will also show their " Electrolite " lighting plant, designed to run on paraffin fuel.

The Auto-Welding and Engineering Company, Ltd. will have on view samples of electric welding, of " Wanamaker " coated electrodes, portable electric grinding, polishing and drilling machines, and " Portopool " rotary pumps.

A comprehensive range of telephones for use in all kinds of buildings will be shown by the Reliance Telephone Company, Ltd.

The British Engine, Boiler and Electrical Insurance Company, Ltd., which specialises in the insurance and inspection of power plant, will exhibit a working model of an impregnating plant for applying insulation varnish under vacuum.

An imposing display will be made by Jeyes Sanitary Compounds Company, Ltd., and will include the majority of the firm's specialities.

Ransomes, Sims and Jefferies, Ltd., will show an electric crane, an electric truck, continuous current electric motors, and a " Ruston " double cylinder oil engine.

The " Relay " automatic telephone exchange will be exhibited and demonstrated by the " Relay " Automatic Telephone Company, Ltd., whose invention dispenses with the attendance of human operators.

Nobel Industries, Ltd., will show their own specialities as well as those of their constituent companies—Kynoch, Ltd., Edison Accumulators, Ltd., and Necol Industrial Collodions, Ltd.

The " Squeegee " pump will be the principal exhibit of the Avamore Pump Company, Ltd.

Examples of plants for the production of hydrogen, nitrogen, oxygen, carbonic acid, argon and other gases, as well as compressors and gas appliances, will be included in the display by the British Oxygen Company, Ltd.

Vickers Separators will be shown by British Separators, Ltd.; and the Hydrogen, Oxygen and Plant Company, Ltd., will exhibit their products and give demonstrations of welding and cutting by the oxy-acetylene process.

The Pyrene Company, Ltd., will have on their stand a fire extinguishing apparatus specially designed to meet Board of Trade requirements.

Siemens Brothers and Company, Ltd., in association with Elliott Brothers (London), Ltd., will show marine signalling and telephone apparatus, including engine-room telephones, the directional revolution indicator, the helm indicator, the Forbes log, the look-out indicator, navigation lights indicator, and a variety of recorders, thermometers, and thermo-electrical pyrometers and incandescent electric lamps.

Metallisation, Ltd., will demonstrate their process of melting and atomising of the coating metal (or alloy), which is in wire form, and impinging it as a fine spray on the surface to be coated. Oxygen-hydrogen, oxygen-acetylene, or oxygen-town's gas may be used under suitable pressures.

New Vat Dyestuffs

NEW vat dyestuffs obtained by condensing 2 : 1-naphtho-oxythiophene with halogenated isatins, such as 5 : 7-dihalogenated isatin, are described by W. Bauer and A. Herre (Bayer Co.), of Germany, in *U.S. Patent* 1,434,983. The new dyes are in a dry state reddish brown crystals with a metallic lustre which are soluble in hot nitrobenzene with a reddish brown coloration. They yield with hydrosulphite and caustic soda solution yellow vats dyeing cotton, after exposure to air, brown shades fast to chlorine and to light. In order to illustrate the new process more fully the following example is given, the parts being by weight :—220 parts of 5 : 7-dichloro-isatin are dissolved in 5,000 parts of hot glacial acetic acid, a solution of 200 parts of 2 : 1-naphtho-oxythiophene in 500 parts of glacial acetic acid, and then 100 parts of concentrated hydrochloric acid are added. The resulting mixture is heated during one hour on the water bath. The dyestuff which has separated is filtered off after cooling, washed and dried. The product crystallises in brown needles having a metallic lustre which are difficultly soluble in concentrated sulphuric acid with a reddish violet coloration and easily soluble in mono-hydrated sulphuric acid with a bluish violet coloration. It dyes cotton from the hydrosulphite vat in brown shades fast to chlorine, washing and light. On using isatin or 5 : 7-dibromo-isatin instead of 5 : 7-dichloro-isatin, products are obtained capable of dyeing cotton in brown shades.

Radio-activity in Nitrate Deposits

ACCORDING to some investigations recently made in France by M. Stoklava on the exact composition of Chilean nitrate deposits, all these deposits exhibit radio-activity to a slight extent, the radium content varying from 80 by 10-12 to 99 by 10-12 per gram. M. Stoklava has also carried out experiments comparing the fertilising value of Chile nitrate with synthetic nitrate, in which better results were obtained from the natural nitrate, due, it is claimed, to the presence of the radio-active elements. The same experimenter advances a theory for the formation of the nitrate deposits by the action of nitrifying bacteria on volcanic deposits of ammonium chloride over alkaline rocks.

Benn Brothers' Annual Meeting

Good Results from Hard Work: The Growth of Industrial Technology

THE twenty-seventh annual general meeting of Benn Brothers, Ltd., was held on Friday, August 10, at the offices, 8, Bouverie Street, London, E.C.

In his annual address to the shareholders Sir Ernest J. P. Benn, who presided, said :—

The report and accounts which are before you follow the example of their many predecessors, and show that your company not only continues to do well, but continues to do better. I feel, as I have always felt, that this business is capable of almost indefinite expansion, and it is very satisfying to me to see my hopes and aspirations justified. There may, perhaps, come a time when there will be a slackening in pace of our forward march, but you may rest assured that your directors and the admirable staff that is working under them are always on the alert, watching for the first signs of any such novel tendency, and that no effort on their part will be spared to make it as remote as possible. The year 1922–23 was in most departments a little better than its immediate predecessor, but the figures, unless they are carefully examined and thoroughly understood, are likely to make it appear better than it really is. The sale of our book stock to a subsidiary company has given us a bookkeeping profit which we cannot expect to repeat in the future. The price at which this stock was transferred is believed by your board to be a proper price in all the circumstances, but, even so, we have not felt justified in looking upon the sale as an ordinary sale to the book market. For that reason your directors have not allowed this item to influence them in deciding the rate of dividend that they will recommend, but have taken what they believe to be the wiser course of doubling the usual allocation to the reserve account, and have thus strengthened our general position. The satisfactory results of the year's trading are due to one cause, and to one cause only—hard work. My fellow-directors and the staff share with me the view that our fortunes are in our own hands, and that outside and political influences have far less power to help or to damage commerce and industry than is generally supposed. We hold the belief that our own personal work is the only thing upon which we can rely, and if trade cannot be done in the Ruhr—well, we must find it somewhere else. In any case, it is our business to find trade, whatever may be the conditions, and, seeing that as publishers any trade which we do is only the first step in a much bigger volume of trade done by our customers, we are strengthened in our attitude, and rather proud of the success which accompanies it.

Technical Journals and Text Books

The world to-day seems to be a little uncertain as to where it stands and as to its real needs, but our experience shows that there is no uncertainty as to the need for technical information and industrial and scientific research. Our business is to minister to this need, and the growing circulations of all our trade and technical journals are the proof that we are doing our work satisfactorily. The two main branches into which our business is divided, now arranged more systematically by the establishment of a subsidiary company, are periodicals and books. The periodicals give the latest news and information, which the trader, manufacturer, or retailer must have as soon as it is available, while in the books is found that complete record of the technology of an industry which is the basis of all efficient and progressive working. In both departments we are experiencing an ever-increasing demand, showing that not only in this country but the world over the trading classes are taking their work more and more seriously, thus developing an ever greater degree of technical and scientific skill. We aim at leading the way in this great world movement, and to some extent we succeed. One could give innumerable illustrations. Automatic telephony is about to be widely introduced. We are the publishers of the standard work on the subject. Art is slowly beginning to be more generally recognised as having some connection with industry, thanks largely to the efforts of the Design and Industries Association, of which my colleague, Mr. H. P. Shapland, is this year's chairman. Art is no longer a sort of minor department of the furnishing trade, and there is a widespread recognition that things in general may be beautiful as well as useful. This new idea, for it is a new idea, provides many openings for the publication of art books, and our catalogue shows that we have taken full advantage of them.

Our business is becoming more and more a world-wide business. It is perfectly natural and proper that in the collection and publication of technical and scientific and commercial data the whole world should be at our service and we should serve the whole world. We continue to publish the *European Commercial* from Vienna, and to give the best information which is available week by week of actual conditions on the Continent. I need not remind you that this information has a way of differing, not only in form, but in matter, from much of the political material which is published in the general Press. That, indeed, is its value. It is part of our duty to get at the real facts of the situation in every part of the world, and during the year members of the London staff or special correspondents and agents have visited every country in Europe, with the exception of Russia and Portugal. In the autumn of last year Mr. F. E. Hamer, editor of our CHEMICAL AGE, and an ex-president of the National Union of Journalists, made an exhaustive tour of the Eastern States of America, bringing back to us information of first-class value.

A great deal of progress is being made both at home and abroad in the art of printing and the processes of reproduction. Since the days when my father, the founder of the business, published in 1880 the first Meisenbach block to appear in a trade paper, Benn Brothers, Ltd., have always led the way in illustrated journalism and artistic reproduction Our art books have given us opportunities to develop in this connection, and it is literally true to say that during the last year we have ransacked the world's markets for new ideas and new processes. In this way we are doing our share to set a new standard in publishing, which brings me to the only other detail that I will trouble you with, our *Players' Shakespeare*. The celebration of the tercentenary of our national poet appeared to us an event of such importance that in connection with it we attempted the most ambitious publishing project of recent times. The *Players' Shakespeare*, a reprint of the First Folio, under the general editorship of Mr. Harley Granville Barker, with illustrations by the world's authorities on stage settings, was described by the *Morning Post* as "a credit to human endeavour."

I could give you many illustrations from the past year alone of the opportunities which have presented themselves to us, and our endeavour to take advantage of them. But that would not be material proper to a chairman's speech at an annual meeting. My object has been merely to give you a general idea of the aims and aspirations which accentuate your directors, and to ask you to approve of the results which they have so far produced.

I beg to move the adoption of the report and accounts and the payment of a balance dividend, which, with the two interim payments already made, will make a total as before of 17½ per cent., less tax, for the year.

The resolution was seconded by Mr. H. P. Shapland, A.R.I.B.A., and carried unanimously.

The retiring directors and the auditors, Messrs. Cassleton, Elliott and Co., were re-elected.

Imports of Chemicals into France

IMPORTERS of chemical products in France often have great difficulties with the customs administration with regard to the duty on products taxed ad valorem. Thanks to an agreement between the customs administration, the union of industrial chemistry, the merchants' syndicate, representatives and brokers of chemical and fertiliser products, it has been decided that by writing to the headquarters of the Syndicate of Chemical Products, 4 Rue de Rome, Paris, one can obtain a certificate of valuation, an official document by which the syndicate and the union of industrial chemistry certify that the product imported possesses such a value in the domestic market. The customs administration declares that, except in special cases, this certificate attached to the customs declaration will be accepted. The importers should indicate their name, address, designation of the product imported, the tonnage, the origin of the merchandise, the place of paying duty, and the corresponding French tariff number.

Sapon Soaps, Ltd.

New York and Canadian Trading Failures

UNDER the compulsory winding-up order made against Sapon Soaps, Ltd., of Wharf Road, Cubitt Town, London, E., the Official Receiver of the London Bankruptcy Court has issued a summary of the company's statement of affairs and his report on the failure. The liabilities, as regards creditors, are stated at £62,592, of which £31,407 is due to debenture holders. Liabilities expected to rank for dividend are returned at £48,119, and as all the assets, valued at £10,979, are required to meet in part the claims of debenture holders, there is nothing available for unsecured creditors. In regard to the shareholders a deficiency of £299,652 is disclosed, making a total deficiency of £347,772. The deficiency, as to £131,638, is accounted for by depreciation of patents and trade marks; as to £61,395 by advertising expenditure; and as to £34,970 by bad debts.

The company was registered in 1917 to carry on the business of manufacturers of a cereal soap called "Sapon" and to acquire as a going concern the business of "Sapon Limited," which went into voluntary liquidation. The reasons given for the reconstruction of the old company were that the patented processes were sufficiently well developed, and that it was necessary to obtain fresh capital to supply large quantities of soap required by the Army authorities. The old company had spent large sums of money on development of the business, and the value of the patents and trade marks appeared to have been written up from £47,262 to £125,000 on the sale to the new company. More money was required in 1919. Consequently, the capital was increased from £200,000 to £300,000.

An agency had been established in New York by the old company, with Mr. John Macpherson as manager. In 1913 that business was converted into a company called the Cereal Soaps Company (Incorporated), and the old company agreed to supply goods to it in order that in New York a larger company might be formed, and would erect its own plant. In April, 1920, the new company agreed to advance to the Cereal Soaps Company as working capital money or goods to the amount of £25,000. At that date the sum owing by the Cereal Soaps Company was £11,000, for which shares were issued. The business of the New York company was not satisfactory, and at length the sum of £24,493 owing by it was returned as a bad debt.

The company in 1920 formed in Hamilton, Ontario, "Sapon Soaps of Canada, Ltd.," and supplied cash and goods to it to the amount of £6,000. This was also returned as a bad debt. In April, 1921, the company issued, as security for a loan of £20,000 by the bank, debentures covering the whole of the undertaking and property. In September, 1921, further debentures to the amount of £5,000, covering an increased bank loan, were issued.

In 1921 the company manufactured a new insecticide soap called "Derbac," but efforts to obtain further cash capital were unavailing. In November the same year Lord Denbigh, a director, made a loan of £6,000 to the company on the security of a debenture.

Mr. Edward Dexter, chartered accountant, was on June 23rd, 1922, appointed receiver on behalf of the first debenture holder for £25,000, but he ceased to act on December 29th of the same year, and was succeeded by Mr. C. F. N. Gibbons, chartered accountant.

The accounts show that the company's trading to September, 1918, resulted in a gross profit of £25,544 and a net profit of £10,249; to September, 1919, a gross profit of £26,614 and a net profit of £8,233; to September, 1920, a gross profit of £16,303 and a net loss of £416; and to September, 1921, a gross profit of £10,111 and a net loss of £8,132. A net loss of £21,860 from October, 1921, to the date of the receiver's appointment, was accounted for by the adoption of a different principle in stock valuation.

Dividends of 7 per cent. on the preference shares were paid for 1918 and 1919 and an interim dividend to March, 1920; and 2½ per cent. on ordinaries was paid for 1919.

The failure is attributed by the chairman and the secretary to bad management.

Mr. Macpherson, the late managing director, says the failure was due to insufficiency of cash to complete the exploitation of the "Derbac" soap. He is also of opinion that in course of time the New York and the Canadian companies might have become valuable.

Since the winding-up order the receiver for the debenture holders has sold the undertaking and the assets for a sum which is insufficient to satisfy the claims of the first debenture holder; and there is no dividend for unsecured creditors or return of capital to the shareholders.

The liquidation is in the hands of the Official Receiver.

Irish Free State's Fiscal Policy

Repeal of the Dyestuffs Act

IN an interim report to the Irish Free State Minister of Industry and Commerce, the Fiscal Inquiry Committee, appointed on June 15, deal with the Safeguarding of Industries Act, 1921, and the Dyestuffs (Import Regulation) Act, 1920. The Committee state that the Safeguarding of Industries Act, 1921, was framed to impose duties of Customs on certain goods with a view to the safeguarding of certain special industries and to the safeguarding of employment in industries in the United Kingdom against the effects of the depreciation of foreign currencies and the disposal of imported goods at prices below the cost of production.

Safeguarding Act

The provisions of Part I of the Act, the Committee state, applied to the United Kingdom as a whole, and were framed with regard to the peculiar needs of certain industries which, though of importance in Great Britain, are industrially insignificant in the Saorstat. At the same time they increased the cost to the consumer of many useful and some necessary commodities without producing any return to the public revenue corresponding to the inconvenience which they caused. It appears from an official return made to us by the Revenue Commissioners that the revenue under this head for the first quarter of the current financial year amounted to no more than £1,625. In particular, scientific and educational establishments are adversely affected by the increased price of optical and other scientific instruments; and the evidence put before us proves that the prosperity of the optician's business and the interests of the Irish consumers of optical goods have been adversely affected by the increased price of French and other foreign lenses.

Having carefully considered the question in all its bearings, the Committee have come to the conclusion that Part I. of the Act should be repealed. They suggest, however, that a period of six months should be allowed to expire before the repeal takes effect in order to avoid inflicting hardship on the holders of stocks purchased while the duties were in force.

"The question of protecting industry against unfair competition arising from 'dumping' and from depreciated currencies in foreign countries, dealt with in Part II. of the Act," the Committee state, "is a complex one, upon which we do not feel prepared to express any general or final opinion at this stage of our inquiry. While we see no objection to the retention of the powers conferred on the Board of Trade by Part II. of the Act which would render it possible for the Ministry of Industry and Commerce to make in the future such orders as may seem advisable for the protection of Irish industries, we see no reason for retaining the duties already imposed on imports from Germany under these powers since we have formed the opinion that no Irish interest would be injuriously affected by their repeal, and as an advertisement inviting evidence from persons likely to be affected by the repeal has evoked no reply."

Dyestuffs Act Repealed

Finally the Committee add: "The Dyestuffs (Import Regulation) Act, 1920, which restricted the importation into the United Kingdom of all synthetic organic dyestuffs, colours, and colouring matters, and of all organic intermediate products used in the manufacture of any such dyestuffs, colours or colouring matters, was enacted with a view to the safeguarding of the dye-making industry in the United Kingdom. As there is no such industry to be protected in the Saorstat, and as hardship is inflicted upon textile and other industries by the retention of this restriction, we recommend that this Act be repealed forthwith."

According to the *Freeman's Journal* the Dyestuffs Act has already been repealed.

Mineral Production of Canada

Revised Official Statistics on Cobalt, Copper, Nickel and Platinum

WE have been favoured by the High Commissioner for Canada with revised statistics on the mineral production of that Dominion, together with the average New York quotations for each class of metal and the total values of the principal products.

Cobalt

The major portion of the world's supply of cobalt for nearly two decades, says the report, has been derived from the silver-cobalt-nickel arsenides of the cobalt district.

During 1922 three smelters in Ontario, treating ores and residues from that district, marketed cobalt oxide, metallic cobalt, cobalt sulphate, cobalt carbonate, cobalt hydroxide, and unseparated oxide and stellite (an alloy of cobalt used for high speed tool metal).

The cobalt residues from the cyanide process were mainly treated in Canada during 1922, although some of these, as well as smelter residues, amounting to 518 tons (containing 173,211 lb. of cobalt), were shipped abroad for treatment.

Canada's cobalt production in 1922 was 569,960 lb., which, at $3·25 per lb., would be worth $1,852,370. This was the average New York quotation during the year. The following is a summary of the production statistics for 1922. Cobalt ores and residues treated or in process amounted to 3,719 tons, and the metallic cobalt content of this amount (by assay) was 536,400 lb.

	Output of Smelters.		Marketed.	
	Total.	Cobalt contained.	Quantity.	Value as reported by smelters.
Metallic cobalt	106,274 lb.	106,274 lb.	109,067 lb.	$282,602
Cobalt oxide ..	360,495 lb.	252,347 lb.	398,697 lb.	$798,271
Mixed oxide ..	86,730 lb.	39,023 lb.	123,605 lb.	$99,687
Residues exported	not given	172,311 lb.	1,036,000 lb.	$156,402
Total Quantity.....		569,960 lb.		$1,336,962
Computed value.....		$1,852,370		

Copper

Copper produced during 1922 amounted to 42,879,818 lb., which, at the average New York price of $13·32 per lb., was worth $5,738,177. In 1921 the yield was 47,620,820 lb., the average quotation $12·502 per lb., and the total value $5,953,553.

The production last year included 29,595,440 lb. contained in blister copper, part of which was refined in Canada and part exported to the United States for treatment; 10,841,647 lb. contained in nickel-copper matte; 57,708 lb. contained in copper sulphate, and 2,385,023 lb. estimated recoveries from ores, concentrates and residues exported for treatment. The copper production of Ontario amounted to 10,943,636 lb., valued at $1,464,477; and that of British Columbia 31,936,182 lb., valued at $4,273,700. The Ontario product included copper derived from speiss and residues from the silver smelters and gold mines.

The total production of refined copper during 1922 was 730,000 lb., compared with 4,286,000 lb. in 1921. During last year the plants of the British America Nickel Corporation were idle, and the total Canadian production was from the refinery at Trail.

Nickel

The Canadian nickel market having consistently been stagnant, the production for 1922 was lower than in any year since 1904. The output included 17,355,056 lb. contained in nickel copper matte made by the Canadian smelters treating Sudbury ores, and 242,067 lb. nickel contents of smelter products resulting from the treatment of silver-cobalt ores.

Nickel from the Sudbury ores in 1922 amounted to 17,355,056 lb. and that produced from cobalt-silver ores 242,067 lb.—total 17,597,123 lb., valued at $6,158,993. The average New York quotation was 35 cents per lb.

The Platinum Group

Metals of the platinum group in Canada for 1922 were derived almost entirely from the nickel-copper ores of the Sudbury district. Owing to the limited production of nickel-copper the platinum group products were comparatively small. New York average quotation for the year were: Platinum, $97·618 per fine oz., palladium $65·00 per fine oz., and the osmium group $80·00 per fine oz. The total platinum production for 1922 is tabulated as follows:—

	Platinum.	Palladium.	Rhodium, Osmium, Ruthenium and Iridium.
Produced from Canadian ores,			
Fine ozs.	458	724	391
Value	$44,709	$47,060	$331,280
B.C. Placers, Fine ozs.	11	—	1
Value	$1,074	—	$80
Total for Canada, Fine ozs...	469*	724†	392‡
Value	$45,783	$47,060	$31,360

Yet Another Remedy for Diabetes

DISCOVERY of yet another remedy for diabetes in the form of an artificial fat is announced by the American Chemical Society. The substance, known as Intarvin, was developed in the Columbia University laboratories by Professor Ralph H. McKee, and it has been used successfully in the cases of more than two dozen men and women in New York and Boston. Intarvin is declared to be a true oleomargarine, the fat being made from margaric acid and being essentially glyceryl margarate. A generation ago a supposed oleomargarine was made from cotton seed oil and tallow, this being thought to be a glyceryl margarate, and hence the name of oleomargarine, or fat from margaric acid, was given to this substance, which was later shown to have been incorrectly analysed and that instead it was essentially a mixture of glyceryl palmatate and glyceryl stearate, and was not a margarate at all. Accordingly, Intarvin is the first real oleomargarine. "Though diabetes has been known for more than five centuries, yet," Dr. Kahn stated, in making the announcement, "it is surprising that the only remedies which give promise of success—Insulin and Intarvin—were both discovered within a single year. We have succeeded in preparing an odd carbon fatty acid fat that is edible, is absorbed to the extent of about ninety per cent., is catabolised in the body, and does not yield the ketone substances derived from butyric acid. This fat, when well prepared, is of a white creamy colour, odourless and tasteless, melting at body temperature, and neutral in reaction. When cold and granulated it is quite palatable. It does not cause any sense of nausea, and it seems to satisfy the hungry craving for fat that diabetics have."

Dr. McKee, professor of chemical engineering in Columbia University, and chairman for the United States of the Society of Chemical Industry, who has worked out the method of manufacture, describes the acidosis of diabetes as the most common form of ketosis, and claims that Intarvin is a triumph of research. The cost of the first fat made was practically prohibitive, being about $300 a pound. Now it is being produced so that it can be sold at about $8 a pound, and it is likely that this cost will soon be materially reduced. A pound lasts a patient from one to three weeks. The fat is now being tried by hospitals and physicians in New York, Massachusetts, California, Kansas, and Iowa.

Heat Transmission Through Walls

A WALL made of chalk-cement concrete is three times better from a heat-insulating point of view than a wall of similar thickness made of "London Stock" bricks in cement. This is one of the facts that have been determined in the recent work carried out at the National Physical Laboratory by Dr. Ezer Griffiths and now published as a report by the Department of Scientific and Industrial Research. The report is entitled "Heat Transmission Through Walls, Concretes and Plasters," and is obtainable from H.M. Stationery Office, 28, Abingdon Street, London, S.W.1, post free for 1s. 7d. The thermal conductivity of numerous typical walls and specimens of various cements and plasters has been measured, and details are given in the report of the apparatus and method used, together with a summary of the experimental results. Points of interest are the number of modern hollow walls dealt with and the confirmation of the fact that the best heat-insulating wall is of timber-framed construction.

* Includes 282 oz. platinum, † includes 383 oz. palladium, ‡ includes 266 oz. of others—produced but not reported previous to 1922.

From Week to Week

THE NORWEGIAN WHALING CO., Norge Larik, has, it is reported, been sold to Lever Brothers for about 7,000,000 crowns.

MR. E. TYLER, M.Sc. (Birmingham), has been appointed assistant in the Physics department at University College, London.

MR. F. R. BLAYLOCK has resigned his position as assistant chemist in the U.S.A. Bureau of Mines in order to accept a post in a refinery.

DAMAGE estimated at several millions of francs has been caused by a fire at a phospho-guano factory at La Pallice, near La Rochelle.

A DUTCH FIRM is reported to be investigating the possibilities of using the new element Hafnium in the manufacture of thermionic valves in wireless telegraphy.

THE PAN-PACIFIC SCIENTIFIC CONGRESS, in which fourteen nations are represented, was opened on Monday in Melbourne with the presidential address by Sir D. O. Masson.

MR. E. W. RAVENSHEAR, of the Mines Department, has been appointed secretary to the Miners' Welfare Committee in the place of Mr. G. H. Pryor, who has been appointed private secretary to the Secretary for Mines.

THE EXPORTS of chemical products from Czecho-Slovakia for the six months January to June, 1923, are valued at 69 million crowns. The values for the months of May and June are respectively 10 and 12 million crowns.

DR. F. C. BANTING, the Canadian doctor, whose discovery of Insulin for the treatment of diabetes was described at the recent Medical Congress as "a tribute to Canadian medical science," left Liverpool for Canada on August 10.

A SETTLEMENT of the strike of employees at the chemical works of James Rose and Co., Ltd., Lime Wharf Works, Falkirk, was brought about by an agreement for a conference on the wages dispute between the company and the operatives.

MR. JOHN LAKE REYNOLDS, a young metallurgical chemist, of 12, Oxford Street, Warrington, while riding on a motor cycle to his employment at Parkington Steel Works, crashed into a motor lorry and died soon afterwards from fracture of the skull.

THE NEW Chemical Institute for Ireland has not yet fixed upon any official headquarters, but communications respecting the Institute may be addressed to Dr. Joseph Algar, National University, Dublin, or Dr. A. G. G. Leonard, College of Science, Dublin.

THE BEQUESTS made by Mrs. Ludwig Mond include £2,000 to the University of Manchester for Ludwig Mond Lectures, £2,000 to the British Academy to endow a lecture and prize on Anglo-Saxon literature, £1,000 to Bedford College, London, and £500 to the University of Liverpool.

THE LECTURES delivered by Sir J. J. Thomson in April last on "The Electron in Chemistry," before the Franklin Institute, are being published singly in the Journal of the Institute. The complete series will shortly be published in book form under the title "The Electron in Chemistry."

ACCORDING to the *Margarinezeitung* of Berlin, about fifty new margarine factories have been erected during the last six months, most of them being in north-western Germany. The factories now in existence are said to be sufficient to supply all Germany and its neighbour States with margarine.

CONSIDERABLE PUBLICITY has been given this week to the announcement of the discovery in America of a radio-active liquid capable of giving out light for illuminating purposes. The discoverer, Mr. Guido Blenso, stated that in his experiments he had been assisted by the U.S.A. Bureau of Mines.

A FRENCH COURT MARTIAL, sitting at Landau, passed sentences on a number of directors and engineers of the Badische-Anilin und Soda Fabrik for having refused to assist in the seizure, identification, and removal of their stocks of dyes and chemicals. Two directors were sent to prison for ten years, and others to eight years each.

THE SECRETARY FOR MINES has directed the Chief Inspector of Mines, Mr. Thomas H. Mottram, to hold an inquiry into the causes and circumstances of the explosion which occurred on July 28 in the Maltby Main Colliery, near Rotherham, in which twenty-seven persons lost their lives. The time and place of the inquiry will be announced later.

IT IS PROPOSED to hold a Pan-American Conference on Standardisation at Washington next year, under the ægis of the Department of Commerce. The South American Governments are to be invited to participate, and presumably the governing idea will be to endeavour to obtain the adherence of the various American Governments to U.S. standards.

A PROMINENT figure in the commercial life of the Midlands, Mr. J. H. Chesshire, of West Bromwich, has recently passed away at West Hagley. In his younger days he was a student at the Midland Institute, and received from the hands of Charles Dickens, the president, Queen Victoria's prize for chemistry. For some time he devoted his energies to chemical analysis, but at an early age he had to abandon chemistry for the hardware business.

THE PRINCE OF WALES, on his recent visit to Messrs. Boots' chemical works in Island Street, Nottingham, had an enthusiastic reception from the 1,500 employees. Among the latter were 750 ex-service men and 300 others who had been in the employ of the company more than twenty years. When the Prince visited the laboratory the manufacture of Insulin was explained to him; and among the other processes which attracted his notice was the sanitary packing of tablets in waxed papers.

THE OFFICERS of the British Chemical Plant Manufacturers' Association for the ensuing year include the following:—Mr. L. M. G. Fraser (W. J. Fraser and Co., Ltd.), chairman, Mr. F. R. Blizzard (T. and C. Clark and Co., Ltd.), vice-chairman, and Mr. E. A. Alliott (Manlove, Alliott and Co., Ltd.), hon. treasurer; Executive Committee—Mr. H. Bush (Huntington, Heberlein and Co., Ltd.), Mr. J. H. Rawson (The Widnes Foundry Co., Ltd.), Mr. James Robinson (Mather and Platt, Ltd.), Dr. R. Seligman (Aluminium Plant and Vessel Co., Ltd.) Mr. E. C. Watkins (W. Neill and Son, Ltd.), and Mr. J. W. Wright (The Cannon Iron Foundries, Ltd.).

MR. JESSE L. JONES, the chemical and experimental engineer of the Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pennsylvania, left New York by the *Manchuria* on August 2 for Hamburg, thence travelling via Berlin and Paris to London. He will be at the Hotel Cecil on or about Friday, August 24. He is interested in getting in touch with persons having new technical materials, processes, and inventions valuable to the electrical industry. After Mr. Jones's stay in London he will proceed for a tour throughout Great Britain with the American Foundrymen's Association tour for the purpose of visiting foundries in England, and he will attend the International Foundrymen's Association Convention in Paris, after which he will visit the foundries of France and Belgium.

THE FOLLOWING AWARDS, for the year 1923-1924, have been made by the Salters' Institute of Industrial Chemistry and approved by the Court of the company:—Fellowships are awarded to Mr. T. B. Philip, B.Sc., Imperial College of Science and Technology; Mr. W. G. Sedgwick, M.Sc., Armstrong College, Newcastle-on-Tyne, and Mr. D. T. A. Townend, B.Sc., Imperial College of Science and Technology. Fellowships are renewed to Mr. C. G. Harris, B.A., Jesus College, Oxford, and to Mr. J. H. Oliver, B.Sc., Imperial College of Science and Technology. Mr. W. Randerson, a Fellow for 1922-1923, having been elected to an Albert Kahn Travelling Fellowship for the year 1923-1924, is made an Honorary Fellow for the year.

DR. THE SVEDBERG, of the University of Upsala, Sweden, whose visit to London to read a paper at a conference on "Colloid Chemistry" will be remembered, has had the honorary degree of D.Sc. conferred on him by Wisconsin University in recognition of his leadership as an international authority on colloid chemistry and his success in the direction of research work at the university during the past session. In presenting Dr. Svedberg, Professor Paxson described the University of Upsala as "the world's most active spot for the study of the formation and properties of colloids," and added: "Professor Svedberg has brought to his department a fresh scholarship and a new technique. He has continued here that peaceful conquest of his colleagues that has marked his career in Sweden. And the results of his inspiring teaching are already to be seen in a growing disposition to look to this university as a centre for the study of the special field that he has mastered and illuminated."

References to Current Literature

British

RUBBER.—The influence of bases on the activity of vulcanisation accelerators. G. S. Whitby and A. Cambron. *J.S.C.I.*, August 10, 1923, pp. 333–336T.

The acidity of raw rubber. G. S. Whitby and A. R. Winn. *J.S.C.I.*, August 10, 1923, pp. 336–339T.

NEW ELEMENT.—Should the element of the atomic number 72 be called celtium or hafnium? G. Urbain. *J.S.C.I.*, August 10, 1923, pp. 764–769.

ESSENTIAL OILS.—The extraction of piperitone from essential oils. J. Read and H. G. Smith. *J.S.C.I.*, August 10, 1923, pp. 339–340T.

GENERAL.—Chemistry in the electrical industry. A. A. Drummond. *J.S.C.I.*, August 10, 1923, pp. 769–770.

REACTIONS.—The conditions of reaction of hydrogen with sulphur. Part II. The catalytic effect of oxygen. Part III. The mechanism of the reaction of hydrogen with sulphur and its catalysis by oxygen. R. G. W. Norrish and E. K. Rideal. *Chem. Soc. Trans.*, July, 1923, pp. 1,689–1,705.

TAUTOMERISM.—Ring-chain tautomerism. Part VI. The mechanism of the keto-cyclol change in the propane series. E. W. Lanfear and J. F. Thorpe. *Chem. Soc. Trans.*, July, 1923, pp. 1,683–1,689.

The correlation of additive reactions with tautomeric change. Part I. The aldol reaction. E. H. Usherwood. *Chem. Soc. Trans.*, July, 1923, pp. 1,717–1,726.

SULPHIDES.—The polysulphides of the alkali metals. Part IV. The polysulphides of ammonium. J. S. Thomas and R. W. Riding. *Chem. Soc. Trans.*, July, 1923, pp. 1,726–1,738.

OXIDES.—The constitution of the higher oxide of nickel. O. R. Howell. *Chem. Soc. Trans.*, July, 1923, pp. 1,772–1,783.

SUGARS.—Constitutional studies in the monocarboxylic acids derived from sugars. Part I. Tetramethyl galactono-lactone and the structure of galactose. J. Pryde. *Chem. Soc. Trans.*, July, 1923, pp. 1,808–1,815.

CATALYSIS.—A study of catalytic actions at solid surfaces. Part IX. The action of alumina and certain other oxides in promoting the activity of nickel catalyst. E. F. Armstrong and T. P. Hilditch. *Roy. Soc. Proc.*, July, 1923, pp. 586–597.

The catalytic decomposition of sodium hypochlorite by cobalt peroxide. O. R. Howell. *Roy. Soc. Proc.*, August, 1923, pp. 134–152.

EXPLOSIVES.—Calorimetry of high explosives. R. Robertson and W. E. Garner. *Roy. Soc. Proc.*, July, 1923, pp. 539–555.

FILTRATION.—A stream-line filter. H. S. Hele-Shaw. *Roy. Soc. Proc.*, July, 1923, pp. 556–561.

United States

GAS PURIFICATION.—The removal of small amounts of carbon monoxide from gases by passage through heated granular soda lime. R. E. Wilson, C. A. Hasslacher and E. Masterson. *J. Ind. Eng. Chem.*, July, 1923, pp. 698–701.

REDUCTION.—Reactions of strongly electropositive metals with organic substances in liquid ammonia solution. Part III. The reduction of nitrobenzene by sodium in liquid ammonia. G. F. White and K. H. Knight. *J. Amer. Chem. Soc.*, July, 1923, pp. 1,780–1,787.

ANALYSIS.—The determination of solids (or moisture) by means of a gauze dish. A. Seidenberg. *J. Ind. Eng. Chem.*, July, 1923, pp. 737–741.

The determination of urea alone and in presence of cyanamide by means of urease. E. J. Fox and W. J. Geldard. *J. Ind. Eng. Chem.*, July, 1923, pp. 743–745.

Methyl anthranilate in grape beverages and flavours. R. D. Scott. *J. Ind. Eng. Chem.*, July, 1923, pp. 732–733.

The titration of solutions of permanganate and sodium arsenite. W. T. Hall and C. E. Carlson. *J. Amer. Chem. Soc.*, July, 1923, pp. 1,615–1,620.

RUBBER.—Rubber latex. C. C. Loomis and H. E. Stump. *Chem. and Met. Eng.*, July, 30, 1923, pp. 184–187.

FERTILISERS.—Design and operation in a modern fertiliser plant. C. Wadsworth. *Chem. and Met. Eng.*, July, 30, 1923, pp. 179–188.

CORROSION.—Catalytic action of colloids in corrosion. J. K. Wood. *Chem. and Met. Eng.*, July 30, 1923, pp. 188–192.

ISOTOPES.—The separation of isotopes. Application of systematic fractionation to mercury in a high-speed evaporation-diffusion apparatus. R. S. Mulliken. *J. Amer. Chem. Soc.*, July, 1923, pp. 1,592–1,604.

DYESTUFFS.—Adsorbed moisture and water of crystallisation in certain common dyes. H. Wales and O. A. Nelson. *J. Amer. Chem. Soc.*, July, 1923, pp. 1,657–1,666.

French

REACTIONS.—Industrial syntheses starting from acetylene. A. Cuyot. *Chim. et. Ind.*, July, 1923, pp. 13–22.

SPECIFIC HEATS.—The variation of the specific heat of gases with the temperature according to the most recent investigations. H. Muraour. *Chim. et. Ind.*, July, 1923, pp. 23–29.

ANALYSIS.—Review of analytical chemistry. Part I. A. Kling and A. Lassieur. *Chim. et. Ind.*, July, 1923, pp. 30–48.

METALLURGY.—Introduction to the study of metallic cementation. H. Weiss. *Ann. Chim.*, May–June, 1923, pp. 201–275.

GLYCERINS.—Alkyl-glycerins. R. Delaby. *Ann. Chim.*, May–June, 1923, pp. 275–326.

RING COMPOUNDS.—Cyclisation of γ-ketonic esters. C. Rosanbo. *Ann. Chim.*, May–June, 1923, pp. 327–355.

CATALYSIS.—The catalytic decomposition of amides. Part I. A. Mailhe. *Les. Matières Grasses*, July 15, 1923, pp. 6,488–6,491.

OILS.—Some problems in the mineral oil industry. H. Gault, *Les. Matières Grasses*, May, 15, 1923, pp. 6,429–6,439.

German

CELLULOSE.—The present state of cellulose research. E. Dörr. *Z. angew. Chem.*, August 1, 1923, pp. 399–402.

EXPLOSIONS.—Deflagration and detonation temperatures. H. Kast. *Z. angew. Chem.*, August, 1, 1923, pp. 402–404.

HYDROGENATION.—The hydrogenation of fats. Part I. The influence of some substances on nickel catalysts. G. Kita and T. Mazume. *Z. angew. Chem.*, July 25, 1923, pp. 381–391.

CEMENT.—Coal economy and the preparation of cement. E. Natho. *Z. angew. Chem.*, August 1, 1923, pp. 405–407.

PERIODIC SYSTEM.—Modern methods of representing the periodic system of the elements. F. Paneth. *Z. angew. Chem.*, August 1, 1923, pp. 407–410.

ANALYSIS.—The micro-Kjeldahl method in research in tanning and allied industries. O. Gerngross and W. E. Schaefer. *Z. angew. Chem.*, July 25, 1923, pp. 391–394.

The volumetric estimation of uranyl compounds. G. Jander and K. Reeh. *Z. anorg. u. allg. Chem.*, July 19, 1923, pp. 293–301.

The volumetric determination of phosphoric acid by means of uranyl acetate solution. G. Jander and K. Reeh. *Z. anorg. u. allg. Chem.*, July 19, 1923, pp. 302–305.

REACTIONS.—The decomposition of nitric oxide by heating with metals. E. Müller and H. Barck. *Z. anorg. u. allg. Chem.*, July 19, 1923, pp. 309–320.

CERAMICS.—Progress in ceramics. Part I. W. Funk. *Chem. Zeit.*, August 7, 1923, pp. 673–675.

VARNISHES.—Tetralin varnishes. E. O. Rasser. *Chem.-Zeit.*, August 2, 1923, pp. 660–661.

OILS.—The analytical detection of rancidity. R. H. Kerr and C. Sorber. *Z. Deut. Ol.-u. Fett-Ind.* Part I, July 5, 1923, pp. 417–418; Part II, July 12, 1923, pp. 433–434.

The characteristics of turkey red oil. W. Herbig and H. Seyferth. *Z. Deut. Ol.-u. Fett-Ind.*, June 21, 1923, pp. 385–387.

Miscellaneous

OXIDES.—Iron and copper oxides. R. Ruer and M. Nakamoto. *Rec. Trav. Chim. des Pays-Bas*, July, 7, 1923, pp. 675–682.

ACIDS.—Dihydroxymaleic acid. J. Böeseken and J. G. de Voogd. *Rec. Trav. Chim. des Pays-Bas*, July, 7, 1923, pp. 745–749.

THALLIUM COMPOUNDS.—Thallium sulphate and selenate. J. Meyer. *Rec. Trav. Chim. des Pays-Bas*, July 7, 1923, pp. 614–619.

Patent Literature

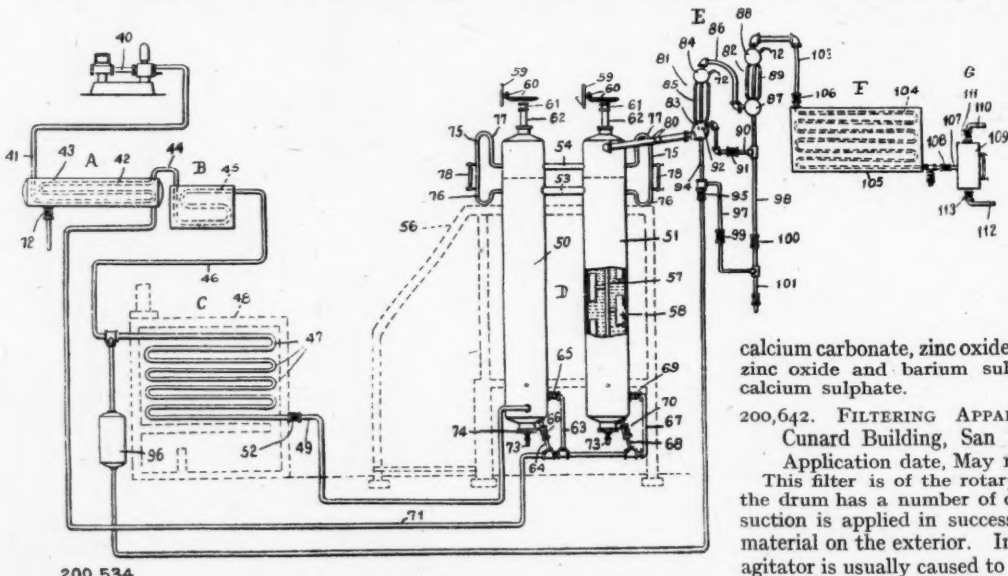
Abstracts of Complete Specifications

200,533. COLLOIDAL-CHEMICAL PROCESSES FOR PURIFYING SUBSTANCES. A. G. Bloxam, London. From Elektro-Osmose Akt.-Ges. (Graf Schwerin Ges.). 35, Lindenstrasse, Berlin, S.W.68. Application date, December 30, 1921.

In colloidal chemical processes for purifying substances, a suspension of the substance is treated with an electrolyte containing hydroxyl ions or hydrogen ions, according to the electrical character of the substance. Some of the particles are peptised and pass into the sol condition, while others settle and can be separated. In the application of the process to the purification of clay and of ores, it is found that the peptisation is sometimes prevented by the presence of calcium compounds such as calcium sulphate. This reacts with part of the caustic soda lye which is added, and the peptisation is hindered by the resulting calcium hydroxide and sodium sulphate. In the present invention an electrolyte is added which has a peptising effect and converts the calcium compounds into insoluble compounds. Such electrolytes are oxalates or citrates of alkalies or organic bases. The calcium oxalate is practically insoluble, and the alkali oxalate or the like is a good peptising agent. Sodium sulphate is also formed and this is preferably converted into barium sulphate by the addition of barium hydrate as an additional peptising agent. Examples are given of the purification of crude kaolin by means of sodium oxalate, and also of clay containing calcium sulphate. Reference is directed in pursuance of Section 7, Subsection 4, of the Patents and Designs Acts, 1907 and 1919, to Specifications Nos. 175,050, 184,271, and 186,855.

200,534. LIGHT OILS SUCH AS GASOLINE, METHOD AND APPARATUS FOR MAKING. A. E. White, London. From the Texas Co., 17, Battery Place, New York. Application date, January 12, 1922.

The crude oil is heated under pressure to a cracking temperature, but is removed before any substantial decomposition takes place and cracked in another chamber mainly by the heat of the oil itself. The apparatus comprises a heat exchanger A, economiser B, heating coil C, cracking stills D, separator E, condenser F, and collector G. Oil is forced by pump 40 through the units A, B to the heating coil C which is heated by a furnace 48 to a higher temperature. The oil then passes through a pipe 49 to a still 50 at the bottom, and thence by a pipe 53 to a still 51. If the stills are insulated, additional heating may not be necessary. The upper and lower ends of the stills project beyond the brickwork, so that the carbon may collect in the cool space at the bottom and the vapour at the top. The residue is drawn off from both stills through a pipe 71 to the heat exchanger A, and does not again pass into the system. Vapour passes out though a pipe 80 to separators or reflux condensers 81, 82. The heavier condensate from these separators is returned through the heating coil C to the stills D. The uncondensed vapour passes into a water-cooled condenser 104, and thence to a collector 109. As an example of the treatment of a paraffin base gas oil to obtain a 30 per cent. conversion, the oil is held at a temperature of 850° F. and a pressure above 200 lbs. per square inch for about 15 minutes, under which conditions practically no decomposition takes place in the heater C. The oil then passes to the stills 50, 51 at the cracking temperature, and is retained there for sufficient time at a reduced pressure for the cracking to take place. Under these conditions less carbon is deposited in the stills.



200,534

200,574. PIGMENTS AND METHOD FOR PRODUCING THE SAME. H. H. Buckman, 130, Copeland Street, Jacksonville, Duval County, Fla., U.S.A. Application date, April 11, 1922.

The object is to produce composite pigments other than lithopone. When a pigment is mechanically mixed with an "extender" such as barium sulphate, chalk, or silica, the composite pigment possesses only the pigmenting power of the true pigment, diluted by the extender substance. When the composite pigment is made by co-precipitation, such as in the case of titanium oxide and barium sulphate, the pigmenting power of the product is not necessarily dependent on the amount of true pigment used. It is now found that the effect of co-precipitated pigments can be obtained more simply and cheaply by heating a mechanical mixture of the pigment and extender until the particles adhere. The temperatures must be sufficiently high to cause cementing but not fusion of the particles. A binder such as cryolite or feldspar may also be added in the proportion of 5 per cent. In an example, white lead 1 part and calcium carbonate 2 parts are thoroughly mixed, and then heated for 2 hours to a dull red heat. The product is finely ground and possesses a pigmenting power similar to that of pure white lead. A similar treatment may be applied to a mixture of titanium oxide with barium sulphate, barium carbonate, calcium sulphate, calcium carbonate, magnesium carbonate, or ground silica, yielding a pigment comparable with pure titanium oxide. Other examples are given of pigments obtained from mixtures of tin oxide and calcium carbonate, zinc oxide and calcium carbonate, zinc oxide and barium sulphate, zinc oxide and calcium sulphate.

200,642. FILTERING APPARATUS. E. L. Oliver, Cunard Building, San Francisco, Cal., U.S.A. Application date, May 16, 1922.

This filter is of the rotary drum type, in which the drum has a number of compartments to which suction is applied in succession to collect the solid material on the exterior. In such an apparatus an agitator is usually caused to move under the drum, the agitator being usually mounted on the same trunnions and therefore in contact with the liquid. In the present invention the agitator is suspended from a pair of pivots at each end of the casing above the liquid level, the pivoted supports passing from each pivot to the opposite side of the agitator so as to cross one another. Under these circumstances a substantially circular oscillatory movement can be given to the agitator.

[*Continued on page* 179]

[*Continued from page* 178]

200,651. DEHYDRATING TAR, APPARATUS FOR. Coke and Gas Ovens, Ltd., 821-844, Salisbury House, London Wall, London, E.C.2. From C. Still, Reckinghausen, Westphalia, Germany. Application date, May 22, 1922.

Crude tar is first passed through a condenser and then to a dehydrator which it enters at the top. In this apparatus the tar is heated in passing downwards by gravity through superposed nests of vertical tubes in the upper part, and then over horizontally arranged coils in the lower part. The tar may then pass to a still and the heavy oil vapour from the latter may be used for heating the tubes and coils in the dehydrator. When the tar is not distilled, the dehydrator is heated by superheated steam. The tar may be preheated before entering the dehydrator by means of the light oil vapour obtained from the tar in the dehydrator.

220,693. LEAD COMPOUNDS, PRODUCTION OF—AND THE MANUFACTURE OF PAINTS AND ANTI-CORROSIVE COMPOUNDS THEREFROM. A. W. Topp, "The Quinta," Weston-Rhyn, Oswestry, Shropshire. Application date, July 7, 1922.

Lead ores or products such as lead tailings are concentrated by flotation, and the concentrates dissolved in brine at a temperature of 70°—80° C. Calcium chloride is added, and the calcium sulphate precipitate is filtered off. The lead chloride solution is treated with lime to precipitate lead hydrate, which is then dried at 80°—102° C. The lead hydrate thus obtained is almost pure. The covering capacity of lead paints depends on the formation of lead linoleate by interaction between the lead hydrate and the linseed oil. Paint made from lead hydrate obtained by this method is capable of covering a much larger area than paint made from the usual lead compounds.

200,701. SULPHIDE ORES AND EQUIVALENT METAL-BEARING MATERIALS, TREATING FOR THE RECOVERY OF USEFUL PRODUCTS. E. A. Ashcroft, 32a, Liverpool Street, London. Application date, July 14, 1922.

The process is for treating lead-zinc sulphide ores, concentrates, mattes, etc. It is found that when such ores are treated with sulphur chloride vapour, the lead and silver sulphides are more readily attacked than those of copper and iron, and the latter are more readily attacked than zinc sulphide. Lead sulphide is almost completely decomposed at 100° C., while zinc sulphide is almost unaffected. The sulphides of antimony, arsenic, and tin are also easily attacked by sulphur chloride. The chlorides of sulphur may be obtained by passing chlorine into sulphur, or a strong solution of sulphur in sulphur monochloride at 140° C. Alternatively, the metallic chlorides obtained by this process may be fused and electrolysed at 420° C., and sulphur added to the surface of the material. Sulphur chloride containing 40 per cent. of chlorine distils off. The ore is selectively treated with the sulphur chloride, and the solid product containing the metallic chlorides and zinc compound is treated with hot water or a strong solution of zinc chloride to dissolve the chlorides. The hot solution is separated and cooled to crystallise the lead chloride. The residue containing zinc may be chlorinated in a converter and the chloride fused and electrolysed. Instead of employing a hot aqueous solvent to extract the metallic chloride, the solid material may be treated on a filter with fused zinc chloride, and the resulting melt treated in any desired manner. The sulphur may also be recovered from the ore by treating the hot residual sulphur chloride.

200,714. INTERMEDIATE COMPOUNDS FOR THE PRODUCTION OF COLOURING MATTERS, MANUFACTURERS OF. British Dyestuffs Corporation, Ltd., Imperial House, Kingsway, London, W.C., and H. H. Hodgson, 136, Paley Road, Bradford. Application date, July 29, 1922.

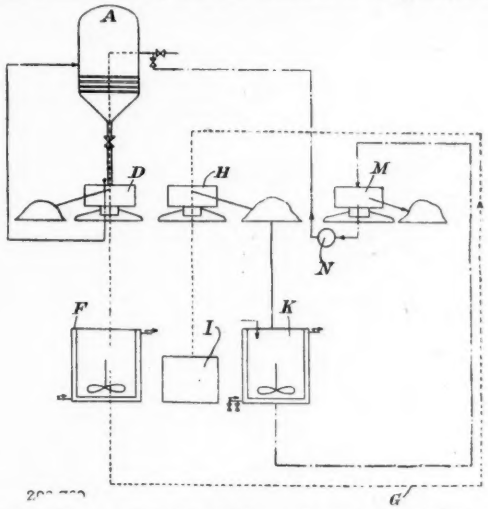
The object is to manufacture meta-chlorphenol by a process which may be applied on a large scale so that the product may be used in the manufacture of dyestuffs. The starting material is meta-chloraniline, which is diazotised and the diazo compound converted into the hydroxy body. The usual methods for converting a diazo body into the corresponding phenol are not applicable, and the main product is a tarry or resinous substance. This method consists in dropping the diazo solution into a mixture of dilute sulphuric acid and sodium sulphate at 135°–140° C., any volatile product being distilled. The resinous substance obtained consists substantially of the azo body from diazo metachloraniline and meta-chlorphenol. The diazo body and the phenol combine so rapidly in the hot acid that very little meta-chlorphenol escapes. It is now found that if the diazo solution is free from nitrous acid, and if the meta-chlorphenol is removed immediately by steam distillation, this combination does not take place, and the yield of meta-chlorphenol is substantially quantitative. The meta-chloraniline is diazotised in dilute sulphuric acid, adding the nitrite solution to the paste of meta-chloraniline sulphate crystals, and keeping the mixture cold. The sulphate crystals are kept in excess. The diazo solution is dropped into a boiling 50 per cent. solution of sulphuric acid, through which steam is blown. The diazo compound decomposes immediately, and the meta-chlorphenol distils over with the steam.

200,739. MONOAZO-DYESTUFFS, MANUFACTURE OF. O. Y. Imray, London. From Chemische Fabrik Griesheim Elektron, Frankfurt-on-Main, Germany. Application date, September 18, 1922.

Dyestuffs are obtained by combining the diazo compound of 5-nitro-2-toluidine with a para-alkyloxy-arylide of 2·3-oxy-naphthoic acid. An example is given of the production of a dyestuff from the diazo compound of 5-nitro-ortho-toluidine and para-anisidide of 2·3-oxynaphthoic acid.

200,760. ALKALI THIOSULPHATES FROM SOLUTIONS, RECOVERY OF. W. S. Mellersh-Jackson, London. From the Koppers Co., 800, Union Arcade Building, Pittsburgh, Pa., U.S.A. Application date, November 21, 1922.

The process is for recovering alkali thiosulphates from their mixtures with the carbonates as obtained in the purification of gases. In a mixed solution of sodium thiosulphate and carbonate, the presence of the thiosulphate tends to make the carbonate less soluble, and the solution is evaporated at its



boiling point until most of the carbonate and bicarbonate separate out. The crystals are separated by filtering or centrifuging while still hot, and may be used again for gas purification. The solution is cooled and sodium thiosulphate separates out. These crystals are of a high purity, and may be recrystallised to remove the residual impurities.

The mixed solution is fed to the evaporator A and evaporated at 120° C. to about one-fifth of its original volume. The sodium carbonate crystals are then removed in a centrifuge D, and the hot liquor then passes to a crystallising and cooling tank F. The mixture of thiosulphate solution and crystals passes through a pipe G to a centrifuge H, and the liquor passes to a tank I. The thiosulphate crystals are redissolved and recrystallised in a tank K, and the crystals are separated in a centrifuge M. The liquor is returned by a pump N to the tank A. The liquor in the tank I may be treated for the recovery of thiocyanate.

NOTE.—Abstracts of the following specification which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention —175,285 (E. Posseyer, Abwasser und Wassereinigungs Ges.) relating to removal of phenol, etc., from waste waters, see

Vol. VI., p.494; 178,824 (H. A. Metz) relating to complex arsenostibino compounds, see Vol. VI., p. 883; 181,722 (C. Clerc and A. Nihoul) relating to extraction of tin, see Vol. VII., p. 284; 182,487 (A. Eckert) relating to oxidising aromatic compounds, see Vol. VII., p. 322; 186,316 (Ges. für Kohlentechnik) relating to removal of sulphuretted hydrogen from gases, see Vol. VII., p. 760; 187,605 (H. Goldschmidt and O. Neuss) relating to condensation products of urea and formaldehyde, see Vol. VII., p. 943; 187,964 (R. Clavel) relating to dyeing of cellulose acetates, see Vol. VII., p. 943.

International Specifications not yet Accepted

199,007. ALCOHOL AND ETHYL HYDROGEN SULPHATE. Compagnie de Béthune, Bully-les-Mines, Pas de Calais, France. International Convention date, June 8, 1922.

Gas containing ethylene is circulated continuously through a drying tower and a column in which sulphuric acid passes over Raschig rings or other contact material. The sulphuric acid is of about 94 per cent. concentration, and the column is heated by a water jacket to 90°-95°C. The ethylene is absorbed yielding ethyl hydrogen sulphate, which may then be converted into alcohol, and fresh gas is continuously added to the cycle.

199,017. ALUMINATES. J. Koritschoner, 14, Kolowratring, Vienna, and F. Hansgirg, Steeg, near Goisern, Austria. International Convention date, June 9, 1922.

A mixture of bauxite, lime and carbon is fused in an electric furnace, and the product is powdered and leached with sodium carbonate solution at 100° C. to obtain alkali aluminate. The production of iron in blast or electric furnaces may be so carried out that the slag contains lime and alumina in the necessary proportions for extraction of the alumina as above.

199,025, 199,027 and 199,030. C. Urfer, 8, Rue de Chantepoulet, Geneva. International Convention date, June 12, 1922.

199,025. A catalyst for use in ammonia synthesis is obtained by heating an alkaline earth metal or lithium with ammonia or hydrogen, yielding a dissociable compound. This is mixed with an inert oxide such as lime or magnesia, heated in vacuo and allowed to cool in nitrogen, yielding a nitride of the metal. If the metal be heated in hydrogen, a hydride is obtained, and if in ammonia, an amide is obtained. Ammonia synthesis may be effected at atmospheric pressure by using these catalysts.

199,027. Alkaline earth metals, lithium, chromium, manganese or cerium, or their hydrides or nitrides are obtained in finely divided condition by heating their amalgams in vacuo, hydrogen or nitrogen respectively. The products are used for the synthesis of ammonia at low pressures and relatively low temperatures.

199,030. A halide of a metal such as cerium, lithium, calcium, strontium, barium, lanthanum, thorium, glucinum, zirconium, vanadium or molybdenum is heated with a reducing metal such as sodium, potassium or calcium. The product is cooled in vacuo, nitrogen or hydrogen, and consists of a metal capable of forming a nitride, or the nitride itself, mixed with the halide of the reducing metal. These products act as catalysts in the synthesis of ammonia.

199,032. AMMONIA SYNTHESIS AND CATALYSTS. C. Urfer, 8, Rue de Chantepoulet, Geneva. International Convention date, June 12, 1922.

Catalysts for ammonia synthesis consist of a mixture of (1) the nitride or amide of alkaline earth metals or lithium, which is obtained by heating the metal in nitrogen or ammonia, and is decomposed by heating in hydrogen; (2) magnesia, alumina or lime; (3) a metal which accelerates the decomposition of the nitride or amide, such as lead, cadmium, bismuth, antimony, commercial zinc, gold, copper or silver. Ammonia may be obtained by synthesis at atmospheric pressure and a temperature below 600° C.

199,364. HYDROGEN. L'Oxhydrique Française, 8, Avenue Jules Ferry, Malakoff, Seine, France. International Convention date, June 17, 1922.

In the process for producing hydrogen by means of iron and steam, the iron oxide is reduced by coal gas or coke oven gas. When coal gas is used, only part of the hydrogen and carbon monoxide is oxidised, the hydrocarbons are not affected, and the calorific value of the gas is increased.

LATEST NOTIFICATIONS.

201,510. Process of manufacturing cellulose esters. Soc. de Stearinerie et Savonnerie de Lyon. July 29, 1922.

201,512. Yeast stimulant and process of manufacturing the same. International Takamine Ferment Co. July 25, 1922.

201,520. Method for producing ferro-chrome and other ferrous alloys. Berlin, D.W. July 26, 1922.

201,526. Production of hydrated celluloses. Soc. Industrielle pour l'application de Brevets et Procédés. July 25, 1922.

201,528. Process for the production of salts of barium and strontium soluble in water from the residues of the manufacture of barium sulphide and strontium sulphide. Rhenania Verein Chemischer Fabriken Akt.-Ges. July 31, 1922.

201,531. Process of vulcanising oils or fats. Meulen, J. H. van der. July 31, 1922.

201,540. Manufacture of sulphurised dyestuffs. Soc. of Chemical Industry in Basle. July 28, 1922.

201,570. Vulcanisation of caoutchouc, gutta-percha, and the like. Chatelan, Dr. J. July 28, 1922.

201,575. Production of new dyestuffs of the anthraquinone series. Farbenfabriken vorm. F. Bayer and Co. July 29, 1922.

Specifications Accepted, with Date of Application

185,728. Aminophenyl arsinic acids and their derivatives, Process for the commercial preparation of. Etablissements Poulenc Freres. September 7, 1921.

188,666. Drying gases. Naamlooze Vennootschap Algemeene Norit Maatschappij. November 14, 1921.

189,120. Grinding mills. Bradley Pulverizer Co. November 16, 1921.

197,932. Dye from dioxyperylene, Process for manufacturing. H. Pereira. May 18, 1922.

200,998. Concentration or drying of solution suspensions and colloidal dispersions, Process and apparatus for. Plauson's Parent Co.), Ltd. (*H. Plauson*). February 2, 1922.

201,214. Chlorinating liquids, Method of and means for. J. W. van Meter. April 19, 1922.

201,223. Mineral oils, Purification of. A. E. Dunstan. April 22, 1922.

201,231. Precipitating metals from solutions, Process for. E. C. R. Marks. (*Merrill Co.*). April 25, 1922.

201,267. Bi-polar electrode electrolysers. Mather & Platt, Ltd., S. F. Barclay and H. E. Mellor. May 5, 1922.

201,302. Aminoargentomercapto-benzene-carboxylic acid, Manufacture of complex. A. G. Bloxam. (*Farbwerke vorm. Meister, Lucius & Bruning*). May 16, 1922.

201,332. Camphor, Production of. J. Schindelmeiser. June 6, 1922.

201,488. Continuous chlorination of ligno and pecto-cellulose by nascent chlorine for the purpose of obtaining pure cellulose. A. R. de Vains. December 19, 1922.

Applications for Patents

Akt.-Ges. Kummler and Matter. Means for introducing sulphite lye, etc., into furnaces. 19980. August 3.

Allchemin Allgemeine Chemische Industrie Ges. and Jahoda, R. Production of phosphorescent zinc sulphide. 19735. August 1. (Austria, August 2, 1922).

Blumenfeld, J. Preparation of titanium hydroxide. 19612. July 31.

Blumenfeld, J. Filtration of solutions, etc. 19977. August 3.

Buss Akt.-Ges. Apparatus for production of anhydrous tin chloride. 19834. August 2. (Switzerland, August 4, 1922).

Cabrier, A. Distillation of liquids. 19963. August 3. (Italy, August 5, 1922).

Dextrin Automat Ges. Process for liquefaction and saccharification of starch. 20048. August 4. (Austria, May 9).

Eberlein, W. Manufacture of silicates of basic dyestuffs. 20045, 20046. August 4. (Germany, August 6, 1922).

Electrolytic Zinc Co. of Australasia, Ltd. Treatment of zinc-bearing ores, etc. 19605. July 31. (Australia, August 1, 1922).

Electrolytic Zinc Co. of Australasia, Ltd. Electrolytic recovery of zinc from zinc-bearing ores, etc. 19606. July 31. (Australia, August 8, 1922).

Farbenfabriken vorm. F. Bayer and Co. Production of dyestuff of the anthraquinone series. 19495. July 30. (Germany, July 29, 1922).

Farbenfabriken vorm. F. Bayer and Co. Manufacture of indigoid dyestuffs. 19837. August 2. (Germany, October 19, 1922).

Naugatuck Chemical Co. Manufacture of formaldehyde condensation products of aliphatic amines, etc. 19595. July 31. (United States, November 27, 1922).

Naugatuck Chemical Co. Preparation of reaction product of acetaldehyde and aniline. 19600. July 31. (United States, May 26).

Ranson, T. W. Manufacture of phosphate. 19649. August 1.

Rheinsche Kampfer-Fabrik Ges. Production of aromatic sulphonic acids. 19981. August 3. (Germany, August 23, 1922).

Schou, E. V. Manufacture of soap. 19845. August 2.

Soc. of Chemical Industry in Basle. Manufacture of resins. 19475. July 30. (Switzerland, September 1, 1922).

Market Report and Current Prices

Our Market Report and Current Prices are exclusive to* THE CHEMICAL AGE, *and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

London, August 16, 1923.

ALTHOUGH markets generally are under the influence of the holiday season, trade has been a little more active this week. Prices in the main continue steady with a firm tendency.

Export business has also been more active.

General Chemicals

ACETONE continues extremely scarce and price is again higher.

ACID ACETIC is in active request, price very firm.

ACID CITRIC is only moderately active considering the warm weather, with price firm.

ACID FORMIC is quiet but without change in value.

ACID OXALIC.—Very quiet and price easy.

BARIUM CHLORIDE has been fairly active and price is a shade firmer.

BLEACHING POWDER.—Unchanged.

CREAM OF TARTAR extremely firm and inclined to go higher.

FORMALDEHYDE still unobtainable on the spot and at time of writing this report, the effect of the Referee's decision under the Safeguarding of Industries Act has not been felt.

LEAD ACETATE is scarce and firm.

LITHOPONE.—Moderate active, without change in value.

MAGNESIUM CHLORIDE has been in good request, price unchanged.

POTASH, CAUSTIC.—Unchanged.

POTASSIUM CARBONATE has been more active without change in value.

POTASSIUM PERMANGANATE has been in fair enquiry, price is firm.

POTASSIUM PRUSSIATE.—The makers' price has been again reduced and inquiry has been more active.

SODIUM ACETATE is scarce and firm.

SODIUM BICHROMATE.—Unchanged.

SODIUM NITRITE has been in much better demand and price now tends higher.

SODIUM PHOSPHATE has been in better request and price is steady.

SODIUM PRUSSIATE continues slow, but there are indications that the price is steadying somewhat.

SODIUM SULPHIDE in better request without change in value.

ZINC OXIDE.—Unchanged.

Pharmaceutical Chemicals

ACETYL SALICYLIC ACID has been in fair demand; price unchanged.

BARBITONE.—Easier on arrival of fresh supplies.

BROMIDES.—Unsettled; many of the cheap parcels have, however, apparently been disposed of.

COCAINE has advanced further. The market outlook is a firm one.

EUCALYPTUS OIL is firm, supplies being none too plentiful.

METHYL SALICYLATE.—A steady business is reported at last rates.

MILK SUGAR.—Several makers decline to sell at present prices. With any revival in the demand, a firmer market should result.

SANTONINE.—Prices have been reduced.

SODA SALICYLATE.—Continues in fair demand.

VANILLIN.—Unchanged.

MERCURIALS.—In sympathy with the quicksilver market, the English manufacturers have announced a reduction of 6d. per lb.

Coal Tar Intermediates

Business continues to progress on quite steady lines, but no very great volume is reported.

ALPHA NAPHTHOL continues in short supply with considerable orders in the market.

ALPHA NAPHTHYLAMINE is very firm and export buyers are interested.

ANILINE OIL AND SALT are steady with export orders open.

BENZIDINE BASE is firm and no big stocks are available for spot delivery.

BETA NAPHTHOL is without special feature.

DIMETHYLANILINE.—Some home business is reported.

"H" ACID is steady at last quoted price.

ORTHO TOLUIDINE.—Some small home business has passed.

PARANITRANILINE is unchanged.

PARAPHENYLENEDIAMINE.—Export buyers are interested.

Coal Tar Products

The amount of business being placed in coal tar products is no more than moderate, although prices keep steady.

90% BENZOL is freely offered at 1s. 5d. per gallon on rails.

PURE BENZOL is worth from 1s. 9d. to 1s. 10d. per gallon on rails.

CREOSOTE OIL is firm, and none too plentiful. It is quoted at 8½d. per gallon on rails in the North, and 9¼d. to 9½d. per gallon in the South.

CRESYLIC ACID is easy, and is worth about 2s. to 2s. 1d. per gallon for the pale quality 97/99%, while the dark quality 95/97% is worth 1s. 8d. to 1s. 9d. per gallon.

SOLVENT NAPHTHA remains nominally at 1s. 3d. per gallon.

HEAVY NAPHTHA is also uninteresting, and is worth about 1s. 5d. per gallon on rails.

NAPHTHALENES are slow, the crude qualities being worth about £6 5s. to £7 per ton, while 74/76 and 76/78 qualities are worth from £8 to £8 10s. per ton.

PITCH.—The position remains unchanged.

[*Current Market Prices on following pages.*]

Basle Chemical Industries

DEALING with the chemical industry of Basle, which specialises in dyestuffs and drugs, a correspondent of the *Times Trade Supplement* states that while the former branch has been working only five days a week exports of coal-tar, dyes, indigo, and other colours amounted in value to 68,000,000f. in 1821, against 67,000,000f. last year. The lack of orders from Germany and Russia has been balanced by larger purchases by Great Britain and China, each three millions more than last year. In the pharmaceutical branches ordinary lines are lower in price, but branded specialities keep steady. It is noteworthy that some of the leading firms have been able to declare higher dividends in spite of uncertain markets and unstable exchanges. The Société pour l'Industrie Chimique is paying 12 per cent., as compared with 6 per cent. in the previous year; Sandoz, 20 per cent. against 10 per cent.; Schappe, 15 per cent. against 8 per cent.; and Ringwald, 15 per cent. against 10 per cent.

Spontaneous Combustion of Coal

AN unusual piece of apparatus has just been perfected at the Pittsburgh Experiment Station of the United States Bureau of Mines in connection with the study being made on spontaneous combustion of coal. This apparatus permits of continual temperature measurements of the coal samples as they are subjected to the conditions that make for spontaneous combustion. Oxygen is passed through the sample so as to permit the development of the heat in a much shorter time than would be required under conditions of actual storage. In this way it will be possible to determine which coals are most likely to take fire. The apparatus was designed and built by A. C. Fieldner, superintendent of the station, and J. D. Davis, chemist in charge of fuel chemistry.

Current Market Prices

General Chemicals

	Per	£	s.	d.		£	s.	d.
Acetic anhydride, 90–95%	lb.	0	1	4	to	0	1	5
Acetone oil	ton	90	0	0	to	95	0	0
Acetone, pure	ton	127	10	0	to	130	0	0
Acid, Acetic, glacial, 99–100%	ton	71	0	0	to	72	0	0
Acetic, 80% pure	ton	50	0	0	to	51	0	0
Acetic, 40% pure	ton	25	0	0	to	26	0	0
Arsenic, liquid, 2000 s.g.	ton	88	0	0	to	90	0	0
Boric, commercial	ton	50	0	0	to	55	0	0
Carbolic, cryst. 39–40%	lb.	0	1	5	to	0	1	5½
Citric	lb.	0	1	8½	to	0	1	9
Formic, 80%	ton	50	0	0	to	51	0	0
Hydrofluoric	lb.	0	0	7½	to	0	0	8½
Lactic, 50 vol.	ton	38	0	0	to	39	0	0
Lactic, 60 vol.	ton	43	0	0	to	45	0	0
Nitric, 80 Tw.	ton	26	0	0	to	27	0	0
Oxalic	lb.	0	0	6½	to	0	0	6½
Phosphoric, 1.5	ton	35	0	0	to	38	0	0
Pyrogallic, cryst.	lb.	0	5	9	to	0	6	0
Salicylic, technical	lb.	0	1	9	to	0	2	0
Sulphuric, 92–93%	ton	6	0	0	to	7	0	0
Tannic, commercial	lb.	0	2	3	to	0	2	9
Tartaric	lb.	0	1	4	to	0	1	5
Alum, lump	ton	12	10	0	to	13	0	0
Chrome	ton	28	0	0	to	29	0	0
Alumino ferric	ton	7	0	0	to	7	5	0
Aluminium, sulphate, 14–15%	ton	8	10	0	to	9	0	0
Sulphate, 17–18%	ton	10	10	0	to	11	0	0
Ammonia, anhydrous	lb.	0	1	6	to	0	1	8
.880	ton	32	0	0	to	34	0	0
.920	ton	22	0	0	to	24	0	0
Carbonate	ton	32	15	0		—		
Chloride	ton	50	0	0	to	55	0	0
Muriate (galvanisers)	ton	35	0	0	to	37	10	0
Nitrate (pure)	ton	35	0	0	to	40	0	0
Phosphate	ton	65	0	0	to	68	0	0
Sulphocyanide, commercial 90%	lb.	0	1	1	to	0	1	3
Amyl acetate, technical	ton	225	0	0	to	260	0	0
Arsenic, white powdered	ton	73	0	0	to	75	0	0
Barium, carbonate, Witherite	ton	5	0	0	to	6	0	0
Carbonate, Precip.	ton	15	0	0	to	16	0	0
Chlorate	ton	65	0	0	to	70	0	0
Chloride	ton	15	10	0	to	16	0	0
Nitrate	ton	33	0	0	to	35	0	0
Sulphate, blanc fixe, dry	ton	20	10	0	to	21	0	0
Sulphate, blanc fixe, pulp	ton	10	5	0	to	10	10	0
Sulphocyanide, 95%	lb.	0	0	11	to	0	1	0
Bleaching powder, 35–37%	ton	10	7	6	to	10	17	6
Borax crystals	ton	27	0	0	to	—		
Calcium acetate, Brown	ton	12	10	0	to	14	0	0
Grey	ton	22	0	0	to	23	0	0
Carbide	ton	16	0	0	to	17	0	0
Chloride	ton	5	15	0	to	6	0	0
Carbon bisulphide	ton	35	0	0	to	40	0	0
Casein technical	ton	100	0	0	to	105	0	0
Cerium oxalate	lb.	0	3	0	to	0	3	6
Chromium acetate	lb.	0	1	1	to	0	1	3
Cobalt acetate	lb.	0	6	0	to	0	6	6
Oxide, black	lb.	0	9	6	to	0	10	0
Copper chloride	lb.	0	1	1	to	0	1	2
Sulphate	ton	27	0	0	to	28	0	0
Cream Tartar, 98–100%	ton	92	0	0	to	93	10	0
Epsom salts (*see* Magnesium sulphate)								
Formaldehyde, 40% vol.	ton	97	10	0	to	98	0	0
Formusol (Fongalite)	lb.	0	2	1	to	0	2	2
Glauber salts, commercial	ton	4	10	0	to	5	0	0
Glycerin crude	ton	65	0	0	to	67	10	0
Hydrogen peroxide, 12 vols.	gal	0	2	0	to	0	2	1
Iron perchloride	ton	18	0	0	to	20	0	0
Sulphate (Copperas)	ton	3	10	0	to	4	0	0
Lead acetate, white	ton	43	0	0	to	45	0	0
Carbonate (White Lead)	ton	43	0	0	to	45	0	0
Nitrate	ton	44	10	0	to	45	0	0
Litharge	ton	37	0	0	to	39	0	0
Lithophone, 30%	ton	22	10	0	to	23	0	0
Magnesium chloride	ton	3	15	0	to	4	0	0
Carbonate, light	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial)	ton	6	10	0	to	7	0	0
Sulphate (Druggists')	ton	10	0	0	to	11	0	0
Manganese Borate, commercial	ton	65	0	0	to	75	0	0
Sulphate	ton	45	0	0	to	50	0	0
Methyl acetone	ton	78	0	0	to	80	0	0
Alcohol, 1% acetone	ton	105	0	0	to	110	0	0
Nickel sulphate, single salt	ton	38	0	0	to	39	0	0
Ammonium sulphate, double salt	ton	38	0	0	to	39	0	0
Potash, Caustic	ton	35	0	0	to	36	0	0
Potassium bichromate	lb.	0	0	5½	to	0	0	6
Carbonate, 90%	ton	31	0	0	to	32	0	0
Chloride, 80%	ton	9	0	0	to	10	0	0
Chlorate	lb.	0	0	3½	to	—		
Metabisulphite, 50–52%	ton	65	0	0	to	70	0	0
Nitrate, refined	ton	38	0	0	to	40	0	0
Permanganate	lb.	0	0	10	to	0	0	10½
Prussiate, red	lb.	0	3	0	to	0	3	2
Prussiate, yellow	lb.	0	1	2	to	0	1	3
Sulphate, 90%	ton	10	10	0	to	11	0	0
Salammoniac, firsts	cwt.	3	3	0	to	—		
Seconds	cwt.	3	0	0	to	—		
Sodium acetate	ton	25	0	0	to	25	10	0
Arsenate, 45%	ton	45	0	0	to	48	0	0
Bicarbonate	ton	10	10	0	to	11	0	0
Bichromate	lb.	0	0	4½	to	0	0	4½
Bisulphite, 60–62%	ton	21	0	0	to	23	0	0
Chlorate	lb.	0	0	3	to	0	0	3½
Caustic, 70%	ton	19	10	0	to	20	0	0
Caustic, 76%	ton	20	10	0	to	21	0	0
Hydrosulphite, powder	lb.	0	1	5	to	0	1	6
Hyposulphite, commercial	ton	10	10	0	to	11	0	0
Nitrite, 96–98%	ton	27	10	0	to	28	0	0
Phosphate, crystal	ton	16	0	0	to	16	10	0
Perborate	lb.	0	1	0	to	0	1	1
Prussiate	lb.	0	0	6½	to	0	0	7
Sulphide, crystals	ton	8	10	0	to	9	0	0
Sulphide, solid, 60–62 %	ton	14	10	0	to	15	10	0
Sulphite, cryst.	ton	11	10	0	to	12	0	0
Strontium carbonate	ton	50	0	0	to	55	0	0
Nitrate	ton	50	0	0	to	55	0	0
Sulphate, white	ton	6	10	0	to	7	10	0
Sulphur chloride	ton	25	0	0	to	27	10	0
Flowers	ton	11	0	0	to	11	10	0
Roll	ton	9	15	0	to	10	10	0
Tartar emetic	lb.	0	1	2	to	0	1	3
Tin perchloride, 33%	lb.	0	1	1	to	0	1	2
Perchloride, solid	lb.	0	1	3	to	0	1	4
Protochloride (tin crystals)	lb.	0	1	4	to	0	1	5
Zinc chloride 102° Tw.	ton	20	0	0	to	21	0	0
Chloride, solid, 96–98%	ton	25	0	0	to	30	0	0
Oxide, 99%	ton	42	0	0	to	45	0	0
Dust, 90%	ton	50	0	0	to	55	0	0
Sulphate	ton	15	0	0	to	16	0	0

Pharmaceutical Chemicals

Acetyl salicylic acid	lb.	0	3	0	to	0	3	3
Acetanilid	lb.	0	1	6	to	0	1	9
Acid, Gallic, pure	lb.	0	3	0	to	0	3	3
Lactic, 1.21	lb.	0	1	10½	to	0	2	3
Salicylic, B.P.	lb.	0	2	0	to	0	2	3
Tannic, leviss	lb.	0	3	2	to	0	3	4
Amidol	lb.	0	7	9	to	0	8	3
Amidopyrin	lb.	0	12	0	to	0	12	6
Ammon ichthosulphonate	lb	0	1	10	to	0	2	0
Barbitone	lb.	0	18	0	to	1	0	0
Beta naphthol resublimed	lb.	0	1	9	to	0	2	0
Bromide of ammonia	lb.	0	0	7	to	0	0	7½
Potash	lb.	0	0	6	to	0	0	6½
Soda	lb.	0	0	7	to	0	0	7½
Caffeine, pure	lb.	0	10	9	to	0	11	0
Calcium glycerophosphate	lb.	0	5	9	to	0	6	0
Lactate	lb.	0	1	10	to	0	2	0
Calomel	lb.	0	4	6	to	0	4	9
Chloral hydrate	lb.	0	3	10	to	0	4	0
Cocaine alkaloid	oz.	0	18	6	to	0	19	0
Hydrochloride	oz.	0	15	9	to	0	16	3
Corrosive sublimate	lb.	0	4	0	to	0	4	3
Eucalyptus oil, B.P. (70–75% eucalyptol)	lb.	0	1	10½	to	0	2	0
B.P. (75–80% eucalyptol)	lb.	0	1	11½	to	0	2	1
Guaiacol carbonate	lb.	0	8	3	to	0	8	6
Liquid	lb.	0	8	9	to	0	9	3
Pure crystals	lb.	0	9	3	to	0	9	9
Hexamine	lb.	0	3	10	to	0	4	0
Hydroquinone	lb.	0	3	3	to	0	3	6
Lanoline anhydrous	lb.	0	0	7	to	0	0	7½
Lecithin ex ovo	lb.	0	17	6	to	0	19	0
Lithi carbonate	lb.	0	9	6	to	0	10	0
Methyl salicylate	lb.	0	2	3	to	0	2	6
Metol	lb.	0	9	6	to	0	10	6
Milk sugar	cwt.	4	2	6	to	4	5	0
Paraldehyde	lb.	0	1	5	to	0	1	7½
Phenacetin	lb.	0	6	3	to	0	6	6
Phenazone	lb.	0	7	0	to	0	7	3
Phenolphthalein	lb.	0	6	9	to	0	7	0
Potassium sulpho guaiacolate	lb.	0	5	0	to	0	5	3
Quinine sulphate, B.P.	oz.	0	2	3		—		

	Per	£	s.	d.		£	s.	d.
Resorcin, medicinal	lb.	0	5	6	to	0	5	9
Salicylate of soda powder	lb.	0	2	6	to	0	2	9
Crystals	lb.	0	2	8	to	0	2	9
Salol	lb.	0	2	9	to	0	3	0
Soda Benzoate	lb.	0	2	4	to	0	2	6
Sulphonal	lb.	0	14	6	to	0	15	0
Terpene hydrate	lb.	0	1	9	to	0	2	0
Theobromine, pure	lb.	0	10	6	to	0	11	0
Soda salicylate	lb.	0	7	6	to	0	7	9
Vanillin	lb.	1	3	0	to	1	4	0
Coal Tar Intermediates, &c.								
Alphanaphthol, crude	lb.	0	2	0	to	0	2	3
Refined	lb.	0	2	6	to	0	2	9
Alphanaphthylamine	lb.	0	1	6½	to	0	1	7
Aniline oil,drums extra	lb.	0	0	9	to	0	0	9½
Salts	lb.	0	0	9½	to	0	0	10
Anthracene, 40–50%	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine)	lb.	0	2	6	to	0	2	9
Benzidine, base	lb.	0	4	9	to	0	5	0
Sulphate	lb.	0	3	9	to	0	4	0
Benzoic acid	lb.	0	2	0	to	0	2	3
Benzyl chloride, technical	lb.	0	2	0	to	0	2	3
Betanaphthol	lb.	0	1	1	to	0	1	2
Betanaphthylamine, technical	lb.	0	4	0	to	0	4	3
Croceine Acid, 100% basis	lb.	0	3	3	to	0	3	6
Dichlorbenzol	lb.	0	0	9	to	0	0	10
Diethylaniline	lb.	0	4	6	to	0	4	9
Dinitrobenzol	lb.	0	1	1	to	0	1	2
Dinitrochlorbenzol	lb.	0	0	11	to	0	1	0
Dinitronaphthalene	lb.	0	1	4	to	0	1	5
Dinitrotoluol	lb.	0	1	4	to	0	1	5
Dinitrophenol	lb.	0	1	6	to	0	1	7
Dimethylaniline	lb.	0	2	9	to	0	3	0
Diphenylamine	lb.	0	3	6	to	0	3	9
H-Acid	lb.	0	4	9	to	0	5	0
Metaphenylenediamine	lb.	0	4	0	to	0	4	3
Monochlorbenzol	lb.	0	0	10	to	0	1	0
Metanilic Acid	lb.	0	5	9	to	0	6	0
Metatoluylenediamine	lb.	0	4	0	to	0	4	3
Monosulphonic Acid (2.7)	lb.	0	8	6	to	0	9	6
Naphthionic acid, crude	lb.	0	2	6	to	0	2	8
Naphthionate of Soda	lb.	0	2	6	to	0	2	8
Naphthylamin-di-sulphonic-acid	lb.	0	4	0	to	0	4	3
Nevill Winther Acid	lb.	0	7	3	to	0	7	9
Nitrobenzol	lb.	0	0	7	to	0	0	8
Nitronaphthalene	lb.	0	0	11½	to	0	1	0
Nitrotoluol	lb.	0	0	8	to	0	0	9
Orthoamidophenol base	lb.	0	12	0	to	0	12	6
Orthodichlorbenzol	lb.	0	1	0	to	0	1	1
Orthotoluidine	lb.	0	0	10	to	0	0	11
Orthonitrotoluol	lb.	0	0	3	to	0	0	4
Para-amidophenol, base	lb.	0	8	6	to	0	9	0
Hydrochlor	lb.	0	7	6	to	0	8	0
Paradichlorbenzol	lb.	0	0	9	to	0	0	10
Paranitraniline	lb.	0	2	7	to	0	2	9
Paranitrophenol	lb.	0	2	3	to	0	2	6
Paranitrotoluol	lb.	0	2	9	to	0	3	0
Paraphenylenediamine, distilled	lb.	0	12	0	to	0	12	6
Paratoluidine	lb.	0	5	6	to	0	5	9
Phthalic anhydride	lb.	0	2	6	to	0	2	9
Resorcin, technical	lb.	0	4	0	to	0	4	3
Sulphanilic acid, crude	lb.	0	0	10	to	0	0	11
Tolidine, base	lb.	0	7	3	to	0	7	9
Mixture	lb.	0	2	6	to	0	2	9

Essential Oils and Synthetics

Essential Oils.		£	s.	d.
Anise	c.i.f. 1/9 spot	0	1	11
Bay		0	12	0
Bergamot		0	12	0
Cajaput		0	3	6
Camphor, white	per cwt.	4	0	0
Brown	„	3	15	0
Cassia	easier c.i.f. 10/- spot	0	11	6
Cedarwood		0	1	4½
Citronella (Ceylon)	very scarce and firm on the spot	0	3	6
(Java)		0	4	2
Clove		0	7	6
Eucalyptus	scarce and very firm	0	1	11
Geranium Bourbon		1	10	0
Lavender	harder	0	13	0
Lavender spike		0	3	0
Lemon		0	3	0
Lemongrass	per oz.	0	0	2½
Lime (distilled)	quiet	0	4	0
Orange sweet (Sicilian)	easier	0	13	6
(West Indian)	„	0	10	6
Palmarosa	firm and very scarce	1	2	0
Peppermint (American)		0	13	0
Mint (dementholised Japanese)		0	7	0
Patchouli	easier	1	10	0
Otto of Rose	dearer and very firm, per oz.	1	15	0
Rosemary		0	1	8
Sandalwood		1	6	0
Sassafras		0	5	6
Thyme	2/6 to	0	8	0
Synthetics.				
Benzyl acetate		0	3	0
Benzoate		0	3	0
Citral		0	10	0
Coumarine		0	18	6
Heliotropine		0	8	0
Ionone		1	5	0
Linalyl acetate		1	2	6
Methyl salicylate		0	2	6
Musk xylol	dearer	0	11	0
Terpeniol		0	3	0

Process for Dyeing Cellulose Acetate Silk

Artificial silk made from cellulose acetate is coming more and more persistently into trade. As one of the chief drawbacks to the use of this form of artificial silk was its lack of dyeing power with many of the most important dyestuffs, numerous attempts have been made to overcome this objection. E. P. Sisley, of France, in *U.S. Patent* 1,440,501, describes a process of which the principal feature is the treatment of the acetate silk with a solution of trisodium phosphate. The following example is furnished :—The cellulose acetate artificial silk is slowly agitated for three-quarters to one hour in a bath containing per litre 25 grams of crystallised phosphate (diabasic) of sodium, and 5 c.c. of caustic soda solution 36° Bé. The bath is maintained between 140° to 160° F. during the whole duration of the operation. The silk is then thoroughly washed and dried, the loss of weight being 6 per cent. The process can be applied to pure cellulose acetate fabrics or to mixed fabrics such as cellulose acetate silk and natural silk, or cellulose acetate silk and wool. The process which is the object of this invention may be combined with the dyeing itself so that the whole operation takes place in a single bath. The cellulose acetate treated with tribasic phosphate can also be mordanted with tannin and tartar emetic (double tartrate of antimony and potassium) before being placed into the dyeing bath.

Demonstrations of Coal Dust Explosions

An artificial coal dust explosion at the Eskmeals experimental station of the Safety in Mines Research Board, under conditions approximating as nearly as possible to those which obtain when a natural explosion occurs in a coal mine, was witnessed on Sunday by a big party sent by the Yorkshire colliery companies. The dust used in the experiment was from the top hard seam of Notts and Derbyshire, which extends into the Barnsley seam in Yorkshire. An incredibly small quantity of dust sufficed to produce an explosion which under normal working conditions must have been attended by disastrous results. Just over 3 cwt. of dust was spread over a distance of 350 ft., and the explosion was induced in an iron cylinder, 7 ft. 6 in. in diameter, placed in the selected gallery. The pressure exerted was 90 lb. per square inch, and the flame travelled over 400 ft. in about half a second. The convincing demonstration was carried out under the direction of Professor Wheeler, of the Fuel Technology Department of Sheffield University.

Regulations for Dye Imports to U.S.A.

The U.S.A. Treasury Department has requested the State Department to instruct consular officers abroad to require invoices of dyes destined for shipment to the United States and the immediate containers of such dyes to conform with new regulations drafted under the Tariff Act. It is required that the invoices of dyes shall show a descriptive statement of the following particulars : Trade name of article and manufacturer's name, percentage of dye, exclusive of diluent contained in the article ; Schultz or colour index number if any, if none the chemical classification of the dye or the other information required for each component dye in the mixture, together with the method of application of the mixture.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, August 15, 1923.

THE market for chemicals calls for no special remark this week. Prices are stationary, if anything somewhat lower. There is little demand and few inquiries.

Industrial Chemicals

ACID, ACETIC GLACIAL.—98/100%, £60 to £62 per ton; 80% pure, £50 to £51 per ton. 80% technical, £47 to £48 per ton, c.i.f. U.K. Ports. Duty free. Spot lots of this material are rather difficult to obtain at present.

ACID, BORACIC.—Crystals or granulated, £50 per ton; powdered, £52 per ton, carriage paid U.K. stations, minimum ton lots.

ACID, CARBOLIC, Ice Crystals.—Now quoted 1s. 2d. per lb. delivered.

ACID, FORMIC, 80%.—Still available at £50 per ton, ex wharf, spot delivery.

ACID, HYDROCHLORIC.—Maker's price unchanged. 6s. 6d. per carboy, ex works.

ACID, NITRIC, 80°.—£24 per ton, ex station, full truck loads.

ACID, OXALIC.—Still on offer at 6d. per lb. ex store, but this price could probably be shaded somewhat.

ACID, SULPHURIC.—144°, £3 15s. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton extra.

ACID, TARTARIC.—Unchanged at about 1s. 2½d. per lb., less 5% ex store.

ALUM, LUMP POTASH.—Now quoted £11 2s. 6d. per ton, ex store.

ALUM, CHROME.—Offered at £22 to £23 per ton, according to quality, f.o.b. U.K. ports.

AMMONIA ANHYDROUS.—Price remains unchanged at 1s. 5d. per lb., ex station.

AMMONIA, CARBONATE.—Lump, 4d. per lb.; ground, 4¼d. per lb., delivered.

AMMONIA, LIQUID, 880°.—Unchanged at about 3½d. per lb., ex station. Containers extra.

AMMONIA, MURIATE.—Grey galvanisers' quality remains unchanged at about £31 to £32 per ton. Fine White Crystals quoted £24 10s. per ton, ex wharf, early delivery.

AMMONIA, SULPHATE.—25¼%, £13 2s. per ton; 25¾%, neutral quality, £14 5s. per ton, ex works, prompt delivery.

ARSENIC, WHITE POWDERED.—Price for spot lots remains unchanged at about £76 10s. per ton, ex wharf. Slightly lower prices quoted for forward delivery.

BARIUM CHLORIDE, 98/100%.—Spot lots offered at £15 per ton, ex store.

BARYTES.—Finest White English, £5 5s. per ton, ex works.

BLEACHING POWDER.—£11 7s. 6d. per ton, ex station, spot delivery. Contracts 20s. per ton less.

BORAX.—Granulated, £26 10s. per ton; crystal, £27 per ton; powdered, £28 per ton; carriage paid U.K. stations minimum ton lots.

CALCIUM CHLORIDE.—English make unchanged at £5 12s. 6d. per ton, ex quay or station. Continental material about £4 per ton, c.i.f., U.K.

COPPERAS, GREEN.—About £2 2s. 6d. per ton, f.o.b. U.K. port.

FORMALDEHYDE, 40%.—Spots very difficult to obtain, quoted about £95 to £97 per ton, ex wharf. Offered for early shipment from Continent at about £88 per ton, ex wharf.

GLAUBER SALTS.—Fine white crystals quoted £3 15s. per ton, ex store.

LEAD, RED.—English makers reduce price to £40 per ton, carriage paid U.K. stations. Continental material about £35 10s. per ton, ex store.

LEAD, WHITE.—Offered from Continent at £36 per ton, c.i.f. U.K. ports.

LEAD ACETATE.—Spot material scarce. Offered from Continent at £40 per ton, c.i.f. U.K. Prompt shipment.

MAGNESITE, GROUND CALCINED.—English burnt material, £8 5s. per ton, ex station. Finest Continental about £7 5s. per ton, c.i.f. U.K. ports.

MAGNESIUM CHLORIDE.—Continental material unchanged at 32s. 6d. per ton, c.i.f. U.K. ports; spot lots, £2 12s. 6d. per ton, ex store.

MAGNESIUM, SULPHATE (EPSOM SALTS).—Commercial quality, £7 per ton; B.P. quality, £8 5s. per ton, ex station. Continental commercial crystals, quoted £4 per ton, ex store.

POTASH, CAUSTIC, 88/92%.—Offered at £29 15s. per ton, c.i.f. U.K. ports; spot lots about £33 per ton, ex store.

POTASSIUM, BICHROMATE.—Unchanged at 5¾d. per lb., delivered.

POTASSIUM, CARBONATE, 96/98%.—Offered at £28 10s. per ton, c.i.f. U.K., spot lots about £32 10s. per ton, ex store; 90/92% offered at £27 per ton, c.i.f. U.K., spot lots about £28 5s. per ton ex store.

POTASSIUM, CHLORATE.—Unchanged at about 3d. per lb., ex store.

POTASSIUM, NITRATE (SALTPETRE).—Nominally £32 per ton, ex store.

POTASSIUM PERMANCANATE.—B.P. crystals inclined to be higher at about 10¾d. per lb., delivered.

POTASSIUM PRUSSIATE (YELLOW).—In little demand; now offered at about 1s. 2½d. per lb., ex store.

SODA CAUSTIC.—76/77%, £21 7s. 6d. per ton; 70/72%, £19 17s. 6d. per ton; 60/62%, broken £21 2s. 6d. per ton; 98/99% powdered, £24 15s. per ton. All ex station, spot delivery. Contract prices are reduced £2 per ton as from 1st inst.

SODIUM ACETATE.—Some small parcels on offer at about £25 10s. per ton, ex store.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station; M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

SODIUM CARBONATE.—Soda crystals, £5 to £5 5s. per ton, ex quay or station; alkali, 58%, £8 16s. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Continental commercial crystals now offered at £7 15s. per ton c.i.f. U.K; spot lots about £9 10s. per ton, ex store; pea crystals, £15 per ton, ex store.

SODIUM NITRATE.—Refined, 96/98%, about £13 7s. 6d. per ton, f.o.r. or f.o.b. U.K. port.

SODIUM NITRATE.—100%, £26 to £28 per ton, according to quantity.

SODIUM PRUSSIATE (Yellow).—Now quoted at about 6¾d. per lb., ex store.

SODIUM SULPHATE (Saltcake).—Unchanged at about £4 per ton, ex station, for home consumption. Higher prices for export.

SODIUM SULPHIDE.—60/62% solid. Contentinental material unchanged at about £12 10s. per ton c.i.f. U.K.; broken quality £1 per ton more.

SULPHUR.—Flowers, £10 per ton; roll, £9 per ton; rock, £9 per ton; ground, £8 per ton. Prices nominal.

TIN CRYSTALS.—Unchanged at 1s. 4d. per lb.

ZINC CHLORIDE.—English material about £25 per ton. Continental material, about £23 per ton c.i.f. U.K. ports.

ZINC SULPHATE.—Spot lots of Continental material on offer at £11 5s. per ton, ex store.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates and Wood Distillation Products

ALPHA NAPHTHYLAMINE.—Good demand for export. Price firm at 1s. 6½d. lb., f.o.b.

ANILINE OIL.—Export inquiry. Price 10½d. per lb., f..o.b., drums included.

BENZOL.—90's, 1s. 4d. per gallon; pure, 1s. 9d. per gallon, naked, makers' works.

BENZIDINE BASE.—Large export inquiry. Price quoted 4s. 9d. per lb., 100% basis, f.o.b.

BETA NAPHTHOL.—Supplies are offered at 1s. 1d.–1s. 3d. per lb., delivered according to quantity.

BETA NAPHTHYLAMINE.—Good export demand. Price 4s. lb., f.o.b. U.K. port.

DIPHENYLAMINE.—Commercial quality, 3s. 6d. per lb.; pure white crystals, 4s. lb., delivered.

DINITROCHLORBENZOL.—Large export demand. Price £95 per ton, f.o.b. U.K. port.

PHTHALIC ANHYDRIDE.—Home inquiry. Price quoted 2s. 2d. per lb., delivered.

PARA AMINO ACETANILIDE.—Home inquiry. Price quoted 5s. 2d. per lb., 100% basis.

R. SALT.—Home inquiry. Quoted at 2s. 9d. per lb., 100% basis, delivered.

Arsenic Output in the United States

WHITE ARSENIC was produced in the United States at nine plants, operated by six companeis, during the first half of this year, according to Mr. V. C. Heikes, of the Geological Survey. The sales during the first five months of 1923 and the estimated sales in June amounted to 6,035 short tons of refined arsenic, valued at 8.36c. to 15c. a lb., and 1,183 tons of crude arsenic, valued at 7.46c. to 10c. a lb. It was stated that all contracts previously made to deliver arsenic at lower prices were completed, with one exception. Calcium arsenate was made directly from ore at Salt Lake City, the Department reported. It was said that there was every indication of the 1923 output falling short of the 22,000-ton estimate.

"These figures," the report states, "show a lower average rate of production than that of last March, when the activities of the principal producers indicated a considerable increase rather than a decrease in the rate. No large stocks of arsenic remained at the works, and the prospect is good that production during the last half of the year will equal or exceed that during the first half. The rate of production maintained implies an increase of 25 per cent. or more over the output in 1922, but is much less than the possible output stated last April, when proposed increases indicated a domestic production of 22,000 tons of white arsenic. In the United States all white arsenic plants provide for relatively high rates of production prior to the hot season and after its close, but during that season operations are curtailed or suspended. One plant was closed as soon as hot weather started in order to protect the men from the poisonous dust.

"The imports of white arsenic during the first three months of 1923 amounted to 2,694 short tons, valued at $447,645. During this period Germany shipped the largest quantity of white arsenic—588 short tons, valued at $117,549—and was followed by Japan with 513 tons, valued at $78,869. Other countries, named in order of size of shipments of white arsenic to the United States, were France, Belgium, Mexico, England, Canada, Dominican Republic, Brazil and Australia. If the imports of white arsenic continued during 1923 at the rate of 800 tons a month the total available supply in the United States for the year will be about 21,000 tons. No red or yellow arsenic sulphide was reported to have been produced in the United States during the period considered, but imports of these products, amounting to 452 tons, were received from China in January, 1923, having been shipped through a port of British India. Smaller quantities were shipped from France, Germany, England, Belgium, Canada, and Japan. Some metallic arsenic was received from Germany in February."

Phosphorus Restrictions in Italy

DETAILS of the effect of the prohibition of the use of white phosphorus on the match-making industry in Italy are given in a recently issued report of the Senate Committee on a Bill to convert into an Act the prohibition decree of December 23, 1920, by which the use of white phosphorus in the match industry was entirely prohibited in Italy since January 1, 1921. During the two years the decree has been in operation it has been noted that the alteration of equipment has not given rise to the difficulties and the inconveniences that had been feared, although as a result of the prohibition there were more or less long periods of suspension of work when the decree first came into operation, but no factory had actually been closed down.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, August 16, 1923.

ONE looks in vain for any sign of improvement in the condition of the chemical market here, and during the past week business has been very quiet indeed and for the most part confined, as has been the case for some time, to a number of the staple "heavies." Even here, however, in one or two lines a diminution of foreign inquiry has been reported. Home business continues on a hand-to-mouth basis, buyers generally refraining from committing themselves very far ahead. Prices of some products show a weaker tendency.

Heavy Chemicals

Saltcake is meeting with a very fair foreign inquiry, though domestic consumers are reserved with prices steady at £4 10s. per ton. Glauber salts are an inactive section of the market, with quotations now in the neighbourhood of £4 per ton. Hyposulphite of soda keeps very quiet, though at £14 per ton for photographic crystals and £10 for commercial there is no further change in prices to report. Sodium sulphide excites little interest with prices fairly steady at £14 10s. to £15 for 60-65 per cent. concentrated solid and £8 per ton for crystals. Soda crystals are firm and in moderate inquiry at £5 5s. per ton delivered. Bicarbonate of soda is fairly active at £10 10s. per ton delivered to home users. Caustic soda is in quietly steady demand both from home and foreign users, and prices are unchanged at £19 per ton for 60 per cent. and £21 10s. for 76-77 per cent. material. Bleaching powder is also steady and in fair inquiry at £11 7s. 6d. per ton to home consumers. Prussiate of soda keeps dull and price is weaker, round 6½d. per lb. now being quoted. Alkali meets with a moderately active sale both to home users and for shipment, and prices are firm at £7 12s. 6d. per ton for 58 per cent. material. Nitrite of soda is still scarce for early delivery, and with a quietly steady demand prices are maintained at round £26 10s. per ton. Chlorate of soda is meeting with some inquiry at 2¾d. per lb. Phosphate of soda is dull at £14 10s. to £15 per ton. Bichromate of soda is steady at 4½d. per lb., a quiet demand being reported. Acetate of soda is fully maintained at £25 per ton on continued scarcity of spot supplies.

Caustic potash is steady at £28 10s. to £29 per ton for 88-90 per cent. material, a fair amount of business being done. Carbonate of potash, however, is quiet, though unchanged at £31 per ton for 96-98 per cent. and £28 for 90-92 per cent. Yellow prussiate of potash is weaker again at 1s. 2d. per lb., no improvement in demand being reported. Permanganate of potash is quiet but steady at 9½d. to 9¾d. per lb. Chlorate of potash is in moderate demand at about 3d. per lb. Bichromate of potash is steady and fairly active at 5¾d. per lb.

Only moderate business is being done in sulphate of copper, both on export account and for home consumption, and current quotations are on the easy side at £26 per ton f.o.b. Arsenic also is being less urgently called for, but as supplies are still on the short side prices are firm at £72 to £73 per ton for white powdered Cornish makes. Nitrate of lead is still inactive at about £42 per ton. Commercial Epsom salts are unchanged at £4 to £4 10s. per ton; magnesium sulphate, B.P., is quoted at £6. Acetate of lime is firm and rather scarce at £20 to £21 for grey and about £11 per ton for brown. Sugar of lead is quiet but steady at about £42 per ton for both white and brown.

Acids and Tar Products

Acetic acid continues in fair demand at about £65 per ton for glacial and £47 to £48 per ton for 80 per cent. technical. Both tartaric and citric acids are quiet and easier, tartaric at 1s. 2d. to 1s. 2½d. and citric, B.P. crystals, at 1s. 7½d. per lb. Oxalic acid is a dull section at 5½d. to 6d. per lb.

The Manchester quotation for pitch is more or less nominal at round £7 per ton, little actual business being done, though inquiries for next season's shipment continue to come through. Creosote oil keeps fairly steady at 8½d. per gallon but demand is quiet. Solvent naphtha is also inactive at about 1s. 4½d. per gallon. Supplies of carbolic acid, both crude and crystal, are not excessive, and, though the demand is not pressing, prices are firm, the former at 3s. 4d. per gallon, and crystal at 1s. 2½d. to 1s. 3d. per lb. Naphthalene is quiet but steady at up to £20 per ton for refined and £7 to £13 per ton for crude.

Company News

ARNOTT AND CO.—Interim dividend of 4s. per share, the same as a year ago.

THE VAUXHALL RUBBER CO. OF CEYLON.—Dividend for the year to June 20 of 4 per cent.

BRITISH OIL AND CAKE MILLS.—Interim dividend of 5 per cent. on ordinaries, the same as a year ago.

NATIONAL LEAD CO.—A dividend of 2 per cent. on common stock for the half-year has been announced.

EASTMAN KODAK CO. OF NEW JERSEY.—Quarterly dividend of 1½ per cent., being at the rate of 6 per cent. per annum.

LIMMER AND TRINIDAD LAKE ASPHALTE CO.—This company have declared an interim dividend at the rate of 15 per cent. for the half year.

UNITED TURKEY RED CO.—The company are paying dividends on the 5½ per cent. second cumulative preference shares for the two and a half years ended June 30 last.

BRADFORD DYERS' ASSOCIATION, LTD.—Interim dividend for the year to December 31 last of 1s. per share on ordinaries, the same rate as last year. In a report presented last February for 1921-2, a profit of £1,800,209 was shown, against £954,265 for 1920, but the amount included the excess profits duty recovered. There was no draw on the reserves. On the contrary, the dividend on ordinaries for 1922 was raised to 35 per cent., £135,648 was put to dividend equalisation fund, and the balance forward was increased by more than £60,000, the amount being £468,369, less the customary small charges. The transfer register in respect of the ordinary shares will be closed from August 20 to September 1.

W. J. BUSH AND CO., LTD.—It is reported from New York that the subsidiary company in the United States, which, in common with the parent company, made a loss in 1921, was placed on a profit-earning basis again during the past year. The Canadian company also made a moderate profit. After the adjustment of excess profits duty, corporation profits tax, and income-tax, the amount brought forward was £2,658 4s. 1d., to which is added a net profit for the year of £41,788 8s. 5d. After making provision for dividends on the preference shares and an interim dividend of 3 per cent. paid on the ordinary shares, there remains a balance of £30,696 12s. 6d., subject to corporation profits tax for 1922. The payment of a final dividend of 5 per cent. on the ordinary shares was recommended, and this, with the interim dividend already paid, will make 8 per cent. for the year.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIAL.	REF. NO.
Algeria	Copper sulphate, sulphur, fertilisers, etc.	207

"Chemical Age" Inquiry List

The following inquiries have been received from readers of "The Chemical Age." Replies addressed to the box number given below, c/o "The Chemical Age," 8, Bouverie Street, London, E.C.4, will be forwarded to the inquirers.

Manufacturers of "Solucin."—No. H.25.

Makers of "Dog Brand Copper Arsenic."—No. H.26.

Dealers in, or importers of "Tetralin."—No. H.27.

Tariff Changes

BASUTOLAND, BECHUANALAND PROTECTORATE AND SWAZILAND.—Certain changes have been introduced in the import tariff of these countries, bringing it into line with that of the Union of South Africa.

POLAND.—The excise duty on acetic acid has been increased.

Analysts and Food Adulteration

Satisfactory Improvement since War-time

THERE is less food adulteration than was prevalent during and shortly after the European war. A long report on the results of food analyses has just been presented to the Salford Corporation by the borough analyst, Mr. G. D. Elsdon (an occasional contributor to the columns of the CHEMICAL AGE). Adulteration, says Mr. Elsdon, undoubtedly is kept in check both by legal penalties after discovery and the publicity given to offences under the Food and Drugs Act. During 1922, 1,452 samples of food were taken within the borough of Salford for analysis, and 5·6 per cent. were found adulterated. In 1921 the adulterations amounted to 8·7 per cent. The majority of offences were in connection with milk. Three out of 14 samples of cocoa were found adulterated—21·4 per cent. All three came from one manufactory, and each contained one-tenth of a grain of arsenic per pound. In every one of twenty samples of tinned foods small quantities of tin in solution were discovered. The worst sample, "melon and orange jam," contained six grains of metallic tin per pound.

The most striking group in Mr. Elsdon's report includes soda water, whisky, beef and malt wine, non-alcoholic wine, lime juice and lemon squash. In three out of twenty-three samples of whisky there was added water to the extent of 1·9 per cent., 7 per cent. and 6·9 per cent. Two soda water manufacturers were found to have manufactured soda water without introducing any sodium bi-carbonate, and the products were classed as adulterated. Two out of four samples of beef and malt wine were found adulterated; of nine samples of alcoholic wine all were adulterated, and three out of thirteen samples of limejuice and lemon squash cordial were in a similar condition. All the samples of "egg powder" examined brought the revelation that they were nothing but coloured baking powder; but of 116 samples of drugs subjected to analysis only three were found faulty.

Contracts Open

Tenders are invited for the following articles. The latest dates for receiving tenders are, when available, given in parentheses:

JOHANNESBURG (September 18).—White lead, oils, paints, varnishes, etc. (Contract No. 120.) A copy of the conditions of tender is available for inspection by British firms upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. (Reference D.O.T. 11887/E.D./C.C./2.)

Trade in Morocco

THE Vice-Consul at Casablanca, Morocco (Mr. C. G. Hope Gill), who is now on a visit to the United Kingdom, will be pleased to interview firms interested in trade in Morocco (Tangier and Casablanca districts) at the Department of Overseas Trade during the mornings of August 24, 25 and 27. British firms who desire to take advantage of this opportunity are requested to communicate with the Comptroller-General, 35, Old Queen Street, London, S.W.1, quoting Ref. 4879/TG.

White Lead, etc., for South Africa

H.M. SENIOR TRADE COMMISSIONER in South Africa (Mr. W. G. Wickham) reports that the Municipal Council of Johannesburg are calling for tenders, to be presented by September 18, 1923, for the supply of white lead, oils, paints, varnishes, etc. (Contract No. 120). A copy of the conditions of tender is available for inspection by British firms upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1.

"American Shellac"

SALE and advertisement of a shellac substitute as shellac is declared to be misbranding, according to the U.S.A. Federal Trade Commission's order recently issued against a firm who sold a product under the name of "American Shellac," which contained little or no genuine shellac.

China Clay Users

AN inquirer asks for the names of firms supplying China Clay who are outside the Associated China Clays, Ltd.

THE BRITISH ALIZARINE COMPANY LTD.

Manchester London Glasgow

Manufacturers of Alizarine Dyestuffs

ALIZARINE RED (all shades)

ALIZARINE BLUES (soluble and insoluble)

ALIZARINE BORDEAUX

ALIZARINE CYANINE

ALIZARINE GREEN (soluble and insoluble)

ALIZARINE ORANGE

ALIZARINE RED S. POWDER

ALIZARINE BLUE BLACK

ALIZARINE (MADDER) LAKES (of all qualities)

ALIZARINE MAROON

ALIZUROL GREEN (Viridine)

ANTHRACENE BROWN

ALIZANTHRENE BLUE

ALIZANTHRENE BROWN

ALIZANTHRENE YELLOW

Other fast colours of this series in course of preparation

Anthraquinone, Silver Salt and all intermediates of this series

---

CHROME TANNING and other Chrome Compounds

TELEPHONES
663 Trafford Park, MANCHESTER
560 EAST LONDON
2667 DOUGLAS, GLASGOW

TELEGRAMS
BRITALIZ MANCHESTER
BRITALIZ LONDON
BRITALIZ GLASGOW

All communications should be addressed to

The British Alizarine Co., Ltd.
Trafford Park, Manchester

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

BEDE METAL AND CHEMICAL CO., LTD., Hebburn-on-Tyne. (M., 18/8/23.) Registered July 31, £60,000 debentures (inclusive of £50,000 already registered) (filed under sec. 93 (3) of the Companies (Consolidation) Act, 1908), present issue £10,000; general charge. *£24,550 17s. 11d. May 2, 1923.

HEWETT AND REYNOLDS, LTD., London, N.W., dyers. (M., 18/8/23.) Registered August 2, £1,000 mortgage, to E. J. Hewett, 104, Valkyrie Road, Westcliff-on-Sea; charged on 385 and 387, High Road, Willesden.

PRODUCE AND CHEMICAL CO., LTD., London, E.C. (M., 18/8/23.) Registered August 7, £600 debenture and £400 debenture, to Mrs. E. E. Anderson, 46, Brunswick Square, Hove; general charge.

RANDALL AND WILSON, LTD. (late RANDALL AND SON, LTD.), Southampton, chemists. (M., 18/8/23.) Registered July 13, £7,000 2nd debentures (filed under sec. 93 (3) of the Companies (Consolidation) Act, 1908), present issue £5,500; charged on properties at Southampton, also general charge (subject to 1st debentures). *£10,000. June 29, 1922.

RANDALL (F.) (LUTON), LTD., bleachers, etc. (M., 18/8/23.) Registered July 31, £1,600 debenture, to Mrs. E. M. Randall, 83, Hazelbury Crescent, Luton; general charge.

SYNTHETIC PRODUCTS CO., LTD., London, E.C. (M., 18/8/23.) Registered July 31, £1,000 charge, to Research Syndicate, Ltd., 50, City Road, E.C.; charged on property at Kings Lynn, also general charge. *£16,155 9s. 8d. December 31, 1921.

London Gazette

Bankruptcy Information

CURTIS, William Henry, carrying on business at the Atlas Chemical Works, Newmills, in the county of Derby, under the style of W. H. CURTIS AND CO., manufacturing chemist. (R.O., 18/8/23.) Receiving order, August 10. Debtor's petition.

Notice of Dividend

HIRCHBERG, Leon Maurice, Ely Place, London, consulting chemist. First and final dividend of 1s. 6d. per £, payable August 13, 28, Kimberley House, Holborn Viaduct, London.

Partnerships Dissolved

AUTO BY-PRODUCTS CO. (Frank STRINGER, Arthur ROSCOE and Thomas James SUMNER), chemical manufacturers, 41, North John Street, Liverpool, by mutual consent as from August 9, 1923. Debts received or paid by F. Stringer and A. Roscoe, who continue the business.

DENT SERVICE (Solomon Charles STEVENS and Harry DENT), cleaners and dyers, 8, Clarendon Road, Watford, Middlesex, as from July 21, 1923, by mutual consent.

D. RHODES AND CO. (Kenneth SAUL and Ralph Frederick HOLDSWORTH), grease refiners, Beck Street, Bradford, by mutual consent as from August 1, 1923. Debts received or paid by K. Saul, who continues the business.

STANFORD, WYLIE AND FRASER, oil refiners and merchants, Argyle Oil Mills and Chemical Works, Possilpark, Glasgow, dissolved by the death of John Fraser, one of the partners thereof. The business will be carried on by Alexander Wylie, jr., the remaining partner.

New Companies Registered

BURLINGTON SYNDICATE, LTD., Registered August 4. Manufacturing research chemists, importers, manufacturers and dealers in chemical, industrial and other preparations. Capital £100 in £1 shares. Solicitors: C. Crowther, 23, Abingdon Street, Westminster.

CARR AND DAY AND MARTIN, LTD., Brunswick Park Road, New Southgate. Capital, £50,000 in £1 shares (10,000 7½ per cent. cumulative participating preference and 40,000 ordinary). The new company will take over and work the business of Carr and Son, blacking and polish manufacturers, New Southgate, N., and that of Day and Martin, Ltd., blacking manufacturers, Carpenters Road, Stratford, E.

DREADNOUGHT TRADING CO., LTD., 19, Palace Street, Market Street, Manchester. Manufacturers and dealers in machinery, chemicals, general goods, etc. Capital, £500 in £1 shares.

OSMOS SALTS, LTD., Thanet House, 231, Strand, W.C.2. Dealers and manufacturers of medicinal salts, drugs, chemicals, etc. Capital, £6,000 in £1 shares.

J. M. SMITH AND CO. (LONDON), LTD., Hampton Chemical Works, Arthur Street, Old Kent Road, London, S.E. Registered August 3 to take over business of chemical manufacturers and salesmen carried on at Hampton Chemical Works. Capital, £10,000 in £1 shares.

W. R. SMITH AND SONS, LTD., Tattenhall Road Works, near Chester. Manufacturers of materials and specialities from animal, vegetable and chemical products. Capital, £25,000 in £1 shares.

WILSON CHEMICAL CO. (LEEDS), LTD., Old Parrot Yard, The Calls, Leeds. Chemical manufacturers, chemists, druggists, drysalters, oil and colourmen, importers and manufacturers of and dealers in isinglass, brewers' requisites and patent finings for brewing, etc. Capital, £1,000 in £1 shares..

British Engineers' Mission to Russia

A NUMBER of business men, headed by Mr. F. L. Baldwin, chairman of Becos Traders, Ltd., and a director of Kinrich and Sons, Ltd., West Bromwich, have left London on a mission to Russia, where they hope to be able to conclude definite business with the Soviet. The visit is the culmination of long negotiations having in view the re-establishment of trade between this country and Russia, and is particularly the result of the personal endeavours of Mr. A. G. Marshall, managing director of Becos, a member of the mission, who at the Genoa Conference was one of the British experts on the Russian question. Other members of the party are: Sir Charles Wright, managing director of Baldwins, Ltd., and of Becos Traders, Ltd., and other important concerns; Mr. John Denny, of the firm of Dumbarton shipbuilders; Mr. J. Carter, managing director of Crossley Brothers, Ltd., the Manchester engine makers; Major Barley, representing the large group of explosive and other industrial works associated under the name of Nobel Industries, Ltd.; Mr. N. Neville, Mr. S. W. Reeve, and Mr. J. Wardroper, all of Becos Traders, Ltd., which is an association of some eighty British engineering works formed more than ten years ago to prosecute British interests in Russia.

Petrol Price "Cutting" in America

A "PETROL PRICE WAR" has resulted from the action of Governor MacMaster, of South Dakota, in establishing State petrol-selling stations which sell petrol for 16c. (about 8d.) a gallon, as against 22c. (11d.) being charged at public and Standard Oil stations. The Standard Oil Co. of Indiana has met Governor MacMaster's cut with an announcement that they are cutting their prices from 22c. to 15½c. a gallon in eleven States, including Illinois, Wisconsin, Missouri, North and South Dakota, and Kansas—the heart of the motor-owning Middle West. The Standard Oil Co.'s reduction has come simultaneously with the beginning of an inquiry by the Federal Department of Justice to determine a fair price. The Standard Oil companies maintain that a price of 16c. represents a great loss to them throughout the Dakotas especially, although the people of those States are at present paying 9c. (4½d.) for Texas petrol.